Groundwater Well Test Report

Soda Mountain Solar Project

San Bernardino County, California
BLM Case No. CACA 49584

November 2014

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TABLE OF CONTENTS

Executive Summary ES-1

Results and Analysis ES-1

Conclusions ES-4

1 Introduction 1-1

1.1 Overview 1-1

1.2 Well Site 1-4

1.3 Well Test 1-4

1.4 Report Organization 1-7

2 Well Construction and Testing Activities 2-1

2.1 Well Construction 2-1

2.2 Well Testing 2-1

3 Results 3-6

3.1 Geology 3-6

3.2 Hydrogeology 3-9

3.3 Well Yield 3-12

3.4 Water Quality 3-13

3.5 Waste Characterization 3-16

3.6 Compliance with Protective Measures 3-17

4 Analysis 4-1

4.1 Hydraulic Parameters 4-1

4.2 Comparison of Groundwater Model Assumptions to Observed Geologic Conditions and Hydraulic Properties 4-5

4.3 Water Quality Analysis 4-10

5 Conclusions 5-1

5.1 Adequate Groundwater Capacity 5-1

5.2 Impacts on Sensitive Receptors 5-2

5.3 Water Quality 5-4

5.4 Groundwater Model Validity 5-4
5.5 Model Consistency with Field Observations and Recalibration of Groundwater Model 5-4

6 Recommendations 6-1

7 References 7-1

List of Tables

Table ES-1: Comparison of Groundwater Model Assumptions to Well Test Results 8
Table 1.2-1: Well Site Coordinates 1-4
Table 3.2-1: PW-1 Step-Drawdown Well Test Data Summary 3-9
Table 3.2-2: PW-1 Constant-rate Well Test Data Summary 3-12
Table 3.4-1: Groundwater Sample Analytical Results: General Chemistry 3-13
Table 3.4-2a: PW-1 Groundwater Sample Analytical Results: Deuterium, Oxygen-18, and Tritium 3-15
Table 3.4-2b: PW-1 Groundwater Sample Analytical Results: Carbon-13 and Sulfur-34 3-15
Table 3.4-2c: PW-1 Groundwater Sample Analytical Results: Carbon-14 3-15
Table 3.5-1: Soil Sample Analytical Results 3-16
Table 4.1-1: Calculated Hydraulic Parameter Values 4-2
Table 4.2-1: Comparison of Groundwater Model Assumptions to Well Test Results 4-8
Table 4.2-2: Model Recalibration Parameters 4-10
Table 4.3-1: Comparison of Project Site and MC Spring Water Quality Data: General Chemistry 4-11
Table 4.3-2: Comparison of Project Site and MC Spring Water Quality Data: Isotopes 4-12
Table 5.1-1: Project Water Use Compared to Water in Storage 5-2

List of Figures

Figure 1.1-1: Project Location 1-2
Figure 1.1-2: Test Well, Observation Well, and Monitoring Well Locations 1-5
Figure 2.1-1: Well Location Map 2-2
Figure 3.1-1: PW-1 Well Schematic 3-7
Figure 3.1-2: OW-1 Well Schematic 3-8
Figure 3.2-1: PW-1 Constant-rate Well Test Data Plot 3-10
Figure 3.2-2: OW-1 Constant-rate Well Test Data Plot 3-11
Figure 4.1-1: MC Spring and Water Well Water Levels over Time at Zzyzx 4-3

Appendices

Appendix A: Well Construction Methods
Appendix B: Well Permits
Appendix C: Geologic Logs and Well Construction Diagrams
Appendix D: Geophysical Logs
Appendix E: Geotechnical Analyses
Appendix F: Well Development Records
Appendix G: Survey Data
Appendix H: Paleontologic Report
Appendix I: Well Testing Field Records
Appendix J: Laboratory Data
Appendix K: Biological Survey Report
Appendix L: Protection Measures
Appendix M: Hydraulic Analyses

LIST OF ACRONYMS AND ABBREVIATIONS

‰	per-mil
AFY	acre-feet per year
amsl	above mean sea level
ARCH	air rotary casing hammer
ASTM	ASTM International
bgs	below ground surface
BLM	Bureau of Land Management
BMcD	Burns & McDonnell Engineering
btoc	below top of casing
°C	degrees Celsius
$\delta^{13}C$	carbon-13
^{14}C	carbon-14
CAM	California Assessment Manual
County	San Bernardino County
DIC	dissolved inorganic carbon
DO	dissolved oxygen
DOC	dissolved organic carbon
DSC	Desert Studies Center
DWR	Department of Water Resources
E^3H	tritium
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ETP	Environmental Training Program
ft/day	feet per day
ft^2/day	square feet per day
GMMP	Groundwater Monitoring and Mitigation Plan
gpd/ft	gallons per day per foot

gpm	gallons per minute
$\delta^{2}H$	deuterium
ID	inside diameter
LRWQCB	Lahontan Regional Water Quality Control Board
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
µS/cm	microSiemens per centimeter
N	nitrogen
N/A	not applicable
NAD 83	North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NEWP	National Exploration, Wells, and Pumps
NTU	Nephelometric turbidity units
$\delta^{18}O$	oxygen-18
OD	outside diameter
ORP	oxidation-reduction potential
Panorama	Panorama Environmental, Inc.
pCi/L	picoCuries per liter
pmc	percent modern carbon
PVC	polyvinyl chloride
$\delta^{34}S$	sulfur-34
SM	Standard Method
SMS	Soda Mountain Solar, LLC
SP	spontaneous potential
TDS	total dissolved solids
TEM	transient electromagnetic resistivity
Test Plan	Groundwater Well Test Plan
TTLC	Total Threshold Limit Concentration
TU	tritium units
TUP	Temporary Use Permit
UPSI	United Pumping Service, Inc.

USA	Underground Service Alert
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCDT	Vienna Canyon Diablo Troilite
VPDB	Vienna Pee Dee Belemnite
VSMOW	Vienna Standard Mean Ocean Water

EXECUTIVE SUMMARY

This report provides results of the groundwater well test for the Soda Mountain Solar Project (project). Soda Mountain Solar, LLC (SMS), proposes to construct, operate, maintain, and decommission the project, which would be located in the Soda Mountain Valley in San Bernardino County, California, about 6 miles southwest of the Town of Baker (Figure 1.1-1). The proposed project would include withdrawal of approximately 192 acre-feet per year (AFY) of groundwater during a 24- to 30-month construction period and approximately 33 AFY during an estimated 30 years of project operation. Project decommissioning water use at the end of the useful life of the project would be annually on par with that estimated for construction, with decommissioning estimated to require 2 years.

The U.S. Bureau of Land Management (BLM) requested that SMS install and test a groundwater well to provide data for the Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) being prepared for the project. The report also provides information for the U.S. Fish and Wildlife Service to prepare a Biological Opinion for the project.

This report includes the following information:

- Description of field methodology for well installation and testing
- Data obtained during well drilling, construction, development, and testing
- Data analysis and discussion
- Conclusions regarding project water supply and potential for impacts to the Mohave tui chub at MC Spring and the Rasor Road groundwater supply well

RESULTS AND ANALYSIS

As explained in more detail below, the following major findings were deduced from performance of the well test program:

- The sustainable pumping rate obtained in the test well during the constant-rate well test indicates that four or five production wells would be required to provide water for project use
- The total estimated project groundwater use during construction, operation, and decommissioning is approximately 0.48 percent of the water in storage in the aquifer
- Minimal projected drawdowns at MC Spring would have no effect on the federally protected Mohave tui chub

Well Yield

The sustainable pumping rate (26 gallons per minute [gpm]) maintained during the constant-rate test in the test well (PW-1) was lower than the range of pumping rates used in the model simulations (40 to 60 gpm per well). Deeper drilling into the underlying bedrock might allow for additional water level drawdown at a higher pumping rate. If similar well yields of 26 gpm were obtained for other proposed project production wells, four or five wells would be required to supply water for the project for up to 30 months during construction (and up to 2 years during decommissioning), and one well would be required for operational water supply during the 30-year life of the project. All project production wells would be inspected and maintained throughout the life of the project to ensure they are available for use during the decommissioning phase. The additional production wells used for construction and decommissioning supply would also be available as back-up when the primary well used for operational water supply is out of service for maintenance or repair.

Drawdown

Drawdown of the water level in PW-1 was a maximum of approximately 41 feet during the constant-rate well test, which was conducted at a pumping rate of 26 gpm. The drawdown in PW-1 was maintained just above the top of the screen interval, at 471 to 472 feet below ground surface (bgs), within the topmost portion of the filter pack interval that extends to 470 feet bgs. Drawdown in the observation well (OW-1) was a maximum of about 0.21 feet during the test.

Hydraulic Parameters

Specific Yield

Specific yield was calculated at 0.3 for the test well and 0.25 for the observation well. The specific yield indicates that there is substantial water available in the aquifer to support groundwater withdrawal for project use without impacting sensitive resources outside of the aquifer. The total water in storage within the basin is approximately 375,000 acre-feet, assuming a specific yield of 0.25 and an average aquifer thickness of 125 feet. The aquifer storage estimate calculated from the well test is three times the previous estimate of 125,000 acre-feet, indicating the volume of water in storage in the aquifer is greater than previously estimated. The total estimated project groundwater use for construction, operation, and decommissioning (1,854 acre-feet) is approximately 0.48 percent of the water in storage (375,000 acre-feet).

Transmissivity and Hydraulic Conductivity

Transmissivity was calculated to be 186 square feet per day (ft^2/day) using test well data and 3,700 ft^2/day using observation well data. Test well data yield a hydraulic conductivity value of 1.4 feet/day (ft/day) and observation well data yield a hydraulic conductivity value of 30 ft/day. These values of transmissivity and hydraulic conductivity are greater than the high end of the modeled range of values used in the groundwater modeling sensitivity analysis. This indicates that the aquifer is permeable and productive at well site PW-1.

The difference between the test well and observation well transmissivity and conductivity values is explained by (1) the drawdown within the pumping well, which can deflate the calculated transmissivity and hydraulic conductivity values, and (2) the very small drawdown at the observation well (0.21 feet). With very small drawdown measurements the error in measurement due to accuracy, precision, and calibration of the transducer is increased, and resetting of the transducer in the well can also substantially impact the resulting calculations. The geometric mean of these calculations yields a transmissivity of 814 ft^2/day and a hydraulic conductivity of 6.5 ft/day. The geometric mean may provide a more reliable estimate of the aquifer transmissivity and conductivity due to the uncertainties associated with accurately measuring these values at the pumping well and observation well.

Storage

The storage of the Soda Mountain basin is estimated to be approximately 375,000 acre-feet using the measured saturated thickness of the aquifer (which includes a portion of the underlying disintegrated granitic bedrock) and the specific yield calculated from the results of the well test.

12,000 acres x 125 feet saturated thickness x 0.25 specific yield = 375,000 acre-feet

The total water use for project construction, operation, and decommissioning is approximately 1,854 acre-feet. The total water use therefore represents 0.48 percent of the water currently in storage within the basin. Project annual average water use (53.7 AFY for construction, operation, and decommissioning) is also less than annual recharge to the basin, which was estimated by U.S. Geological Survey (USGS) to be 80 to 140 AFY (Halford 2014). Recharge to the basin is greater than the project's annual average use and groundwater would therefore be replenished at a faster rate than the project would extract groundwater.

Drawdown Calculations

Groundwater drawdown at MC Spring at Zzyzx was calculated using the Theis (1935) equation for a scenario of 3 years of groundwater extraction at a rate of 192 AFY (construction) and 30 years of groundwater extraction at a rate of 33 AFY (operation) at the project site. Theis assumes a uniform aquifer to estimate the drawdown at a distance from the well, and assumes there are no hydraulic boundaries imposed by such features as the Soda Mountains that lie between the spring and the project site. Application of the Theis equation to the Soda Mountain Valley provides a very conservative estimate of drawdown at areas outside of the valley (i.e., at MC Spring).

The Soda Mountain Valley is surrounded by low-permeability granitic and metavolcanic bedrock. The low-permeability bedrock concentrates impacts to groundwater levels within the Soda Mountain Valley, and slows the rate and decreases the magnitude of declines in groundwater levels outside of the valley. By assuming the area between the Soda Mountain Valley and MC Spring to the east is part of a uniform aquifer, instead of accounting for the low-permeability mountains between the two areas, the Theis equation overestimates the potential impacts to groundwater levels at MC Spring. The high-end hydraulic conductivity value (30 ft/day) was used in the Theis equation to provide a conservative estimate of groundwater drawdown because higher values of hydraulic conductivity would translate to larger impacts at distance from the well. The drawdown calculation would predict substantially less drawdown at MC Spring if the low-end hydraulic conductivity value were used because the calculated hydraulic conductivity at PW-1 was much lower (approximately 20 times) than the calculated conductivity at OW-1 based on well test data, and impacts to MC Spring would decrease proportional to the change in conductivity. Even with the overestimation of impacts, the Theis equation predicts drawdown of 0.0000068 feet after 3 years of construction and less than 0.021 feet (0.006 meters) at MC Spring after 30 years of project operation. Groundwater levels fluctuate by approximately 0.8 to 1.6 feet (0.25 to 0.5 meters) seasonally at MC Spring and in the alluvial groundwater wells adjacent to the spring. Construction- or decommissioning-phase drawdown would equate to 0.00085 percent of the low-end estimate of seasonal variations (0.8 feet), and operation-phase drawdown would equate to 2.6 percent of the low-end estimate of seasonal variations. A change in water level of 0.021 feet is also below the practical limits of water level measurement and detection. While the predicted change in water levels at MC Spring is small, it is also overstated because the water level declines would be concentrated within the Soda Mountain Valley due to the presence of low-permeability bedrock at the valley margins. The potential declines in groundwater levels at MC Spring would therefore be much less than 0.021 feet and not measurable relative to natural variation.

CONCLUSIONS

There is Adequate Groundwater in the Soda Mountain Valley to Supply Project Construction, Operation, and Decommissioning Uses

The groundwater supply for project construction, operation, and decommissioning was evaluated based on the thickness of saturated alluvium, hydraulic conductivity, groundwater storage, and well yield. The measured saturated thickness of 125 feet and hydraulic conductivity of 1.4 to 30 ft/day indicate that the Soda Mountain Valley aquifer could supply the 192 AFY required during project construction and decommissioning and the 33 AFY required during project operation. The saturated thickness is greater than previously estimated (greater than the estimated average value for entire valley aquifer of 100 feet). Hydraulic conductivity was calculated at 1.4 ft/day and 30 ft/day. The lower value is within the previously modeled range and the higher value is higher than the previous range. The values of hydraulic conductivity calculated based on well test data indicate that the aquifer is moderately productive.

The total water in storage within the basin is estimated at approximately 375,000 acre-feet, assuming a specific yield of 0.25 and an average aquifer thickness of 125 feet, based on well test data. This is three times more than the previous storage estimate, which assumed 100 feet of saturated thickness (average across entire aquifer in valley) and specific yield of 0.1. The total estimated project groundwater use for construction, operation, and decommissioning (1,854 acre-feet) is approximately 0.48 percent of the water in storage in the Soda Mountain Valley. Average annual water use of 53.7 acre-feet is also less than USGS estimates of recharge, which range from 80 AFY to 140 AFY (Halford 2014).

PW-1 was pumped at a rate of approximately 26 gpm during the 72-hour constant-rate test. This would equate to 42 AFY, as shown in the calculation below:

$$26 \text{ gpm} \times 1 \text{ ft}^3/7.48 \text{ gal} \times 1{,}440 \text{ min/day} \times 365 \text{ day/yr} \times 1 \text{ acre}/43{,}560 \text{ ft}^2 = 42 \text{ AFY}$$

Four or five production wells producing at similar rates of about 26 gpm would be adequate to supply the 192 AFY required during project construction and decommissioning and the 33 AFY required during project operation. Several factors influence the total number of wells required for the project. These include:

- The productivity of future project wells: the rate could be higher or lower if a thicker or thinner saturated interval is encountered, or if the permeability is higher or lower
- The amount of grading and compaction required in the final design
- The pace of construction and management of the active construction area
- Use of palliatives to stabilize soils in lieu of water application

All production wells would be installed within the area of permanent project impacts defined in the EIS/EIR. Use of more than three production wells would not have additional environmental impacts because the well area would otherwise be disturbed by the project and the total project water demand would not increase. The use of additional wells to supply water for the project would potentially result in a more diffuse drawdown across the Soda Mountain Valley where impacts to groundwater levels would be slightly less concentrated at each well location. The potential for impacts outside of the valley would be the same with use of more than three wells because the total water demand would be the same as previously proposed.

Project Pumping Will Not Impact Mohave Tui Chub

MC Spring is located approximately 4.5 miles from the nearest proposed production well at the project site. The projected drawdown at a distance of 4.5 miles was calculated using the Theis equation to be 0.0000068 feet after 3 years of construction-phase pumping at 192 AFY and 0.021 feet after 30 years of operation-phase pumping at 33 AFY. The Theis equation assumes a uniform aquifer exists between the production well and MC Spring (i.e., no intervening low-permeability bedrock). The Theis equation was not adjusted for the presence of lower-permeability bedrock in the mountains east of the Soda Mountain Valley. The high-end value of hydraulic conductivity (30 ft/day) was also used to conservatively estimate impacts to MC Spring. Predicted drawdown at distance from the pumping well would decrease proportionally with the decrease in hydraulic conductivity. The model therefore provides a conservative estimate of groundwater declines on the east side of the Soda Mountains by assuming that the geologic unit within the Soda Mountains is as permeable as the basin fill in the Soda Mountain Valley, that groundwater declines will radiate outward at the same rate within the mountain bedrock as within the basin fill, and that hydraulic conductivity is as high as 30 ft/day between the pumping well and MC Spring. This is an extremely conservative assumption because the Soda Mountains are composed of low-permeability granitic rock. Based on the actual geologic conditions, the presence of the intervening mountains would mean that drawdown effects would be smaller outside the Soda Mountain Valley and take much longer to propagate outward from the pumping well toward MC Spring and the tui chub habitat.

Water at MC Spring at the DSC has over twice as much chloride and nearly twice as much TDS compared to the groundwater at well site PW-1. Also, the anion content of water at MC Spring is dominated by chloride, whereas at PW-1 it is dominated by sulfate. The water at MC Spring has the character of an older, more regional groundwater system, where chloride typically becomes the dominant anion (Freeze and Cherry 1979). The Soda Mountain Valley aquifer groundwater has the character of a younger, more localized groundwater system, where sulfate has not yet been superseded by chloride as the dominant anion.

The isotopic signature of groundwater from well site PW-1 also differs substantially from that of MC Spring water and groundwater samples collected east of the Soda Mountains at the DSC.

The differences in chemical composition and isotopic signature between MC Spring and the Soda Mountain Valley aquifer indicate that they likely are not closely connected hydraulically and are part of separate and distinct groundwater systems.

The use of groundwater for the project would have no effect on the Mohave tui chub because:

1. The distance of 4.5 to 5.5 miles between project groundwater extraction wells and MC Spring.
2. The presence of 1.8 to 4 miles of low-permeability bedrock of the Soda Mountains between the Soda Mountain Valley and MC Spring.
3. The Soda Mountain aquifer is chemically distinct from the MC Spring aquifer indicating the resources are part of separate and distinct groundwater systems.
4. An average of 53.7 acre-feet would be used by the project each year relative to the USGS estimate of recharge to the valley of 80 to 140 AFY (Halford 2014).
5. The total project water use (combined construction, operation, and decommissioning) of 1,854 acre-feet represents less than 0.5 percent of the estimated 375,000 acre-feet of water in storage in the Soda Mountain Valley.
6. Even if the intervening low-permeability mountains did not exist, drawdown would be less than 0.0000068 feet at MC Spring after 3 years of construction and 0.021 feet after an additional 30 years of operational water use.
7. Water levels at MC Spring currently fluctuate seasonally between 0.8 and 1.6 feet per year with no effect to the Mohave tui chub.
8. The modeled (sensitivity analysis) drawdown of 0.021 feet (1/4 inch) with no intervening mountains would be so small as to be difficult to reliably detect, given the current natural fluctuations and limitations in accuracy of groundwater level measurement.
9. When project pumping stops, groundwater levels will recover as demonstrated in the pumping test.
10. The project Groundwater Monitoring and Mitigation Plan (GMMP) specifies installation of monitoring wells at key locations in the Soda Mountain Valley and

identifies groundwater levels in the wells that would trigger corrective measures to avoid effects to MC Spring and the Mohave tui chub. Corrective measures include reducing or stopping pumping.

11. Boring data indicate that bedrock beneath the alluvium is composed of granitic material, not carbonate, which is a source of water at MC Spring.

Project Pumping Will Not Impact Rasor Road Groundwater Well

The Rasor Road groundwater well is reportedly a low-yielding well located on the bedrock rim of the Soda Mountain Valley and is installed at a depth greater than 1,000 feet in bedrock. The Rasor Road well is not screened in the same alluvial unit that the project production wells would be screened in; therefore, the water sources for the Rasor Road well and the project production wells would not be the same (i.e., bedrock vs. alluvium). The Rasor Road well is on a bedrock ridge more than 1.5 miles from the nearest planned production well, is not hydraulically connected to the saturated sandy alluvium in the valley (as indicated by its reported low yield), and would not be affected by groundwater pumping in the interior of the valley.

Well Test Results are Consistent with Groundwater Model Sensitivity Analysis

SMS prepared a groundwater flow model in 2011 (RMT 2011), an addendum to the groundwater flow model in 2013 (TRC 2013), and a sensitivity analysis for the groundwater model in 2014 (Panorama 2014b). The model was constructed using the results of geologic mapping (WGI 2011), geotechnical borehole drilling (DYA 2010), and transient electromagnetic resistivity (TEM) soundings (TerraPhysics 2010) performed at the project site, as well as the results of well-reviewed groundwater flow model simulations from similar areas. The major model assumptions and corresponding results based on field data are presented in Table ES-1.

The results from well drilling, construction, and testing are consistent with the following assumptions used in the groundwater flow model:

- Unconfined aquifer
- Fine- to coarse-grained sand alluvial aquifer
- Saturated thickness of 125 feet (within 17 percent of model assumption)
- Pumped well drawdown between 28 and 110 feet
- Granitic bedrock under the aquifer
- Direction of groundwater flow from Soda Mountain Valley toward Soda Lake

Table ES-1: Comparison of Groundwater Model Assumptions to Well Test Results

Parameter	Model Assumption	Field Data	Evaluation
Aquifer Type	Unconfined aquifer	Unconfined aquifer	Field data show model assumption is correct.
Alluvial Aquifer Sediments	Sand	Fine- to coarse-grained sand alluvium and sand-sized disintegrated granite	Field data show model assumption is correct.
Saturated Thickness of Aquifer at PW-1	150 feet at PW-1; 100 feet average across the aquifer[1]	125 feet or more	Results are within expected range of variability of 50 feet. Field data indicate saturated zone is about 17 percent thinner than what was modeled at well site PW-1 based on earlier geophysical data; aquifer thickness is within expected range of variability of 50 feet. A thinner unconfined aquifer at depth does not change the model outcomes because this is offset by the hydraulic conductivity being higher than the low end of the range that was simulated. The saturated thickness of alluvium at PW-1 was estimated to be about 150 feet based on the earlier geophysical data. The expected range of variability for the saturated thickness is on the order of at least 50 feet based on the earlier geophysical data. An average value of 100 feet of saturated alluvium was used to calculate the volume of groundwater in storage within the valley aquifer as a whole, and this location exceeds the average value of 100 feet.
Production Well Pumping Rate	40-60 gpm, assuming two or three wells pumping at comparable rates[2]	26 gpm	Sustainable pumping rate (26 gpm) was lower than the range of pumping rates used in the model simulations (40 to 60 gpm). Pumping rate might be increased by drilling deeper through fragmented granitic rock that underlies the alluvial aquifer.
Drawdown in Test Well during Pumping	28 feet (three wells pumping, 3 years, high-end parameters) to 110 feet (three wells pumping, 3 years, low-end parameters)	41 feet	Observed drawdown falls within the range of values simulated. Observed drawdown in the pumped well is close to the value predicted for the 3-well, 3-year (i.e., construction period), high-end parameter set scenario. Drawdown is less than that predicted in the low-end scenario, which is to be expected, given that the sustained pumping rate (26 gpm) was less than that used in the model (40 gpm).
Hydraulic Conductivity of Aquifer	0.86 to 3.2 ft/day (numerical model) 0.17 to 16 ft/day (sensitivity analysis)	1.4 to 30 ft/day	Hydraulic conductivity range extends across high end of range of values previously modeled, indicating that the aquifer is more permeable than previously expected.

Table ES-1 (*Continued*): Comparison of Groundwater Model Assumptions to Well Test Results

Parameter	Model Assumption	Field Data	Evaluation
Specific Yield	0.1	0.25 to 0.3	The specific yield is 2.5 to 3 times that used in the model, indicating the amount of water present in the aquifer that is available for release (i.e., that can be accessed by pumping) is greater than previously estimated.
Storage	125,000 acre-feet	375,000 acre-feet	Aquifer storage is three times what was estimated from the model, indicating the volume of water in storage in the aquifer is greater than previously estimated.
Depth of Test Well	352 feet bgs	555 feet bgs (including 10-foot-long sump)	Test well was installed about 200 feet deeper than expected because depths to groundwater and bedrock were deeper than expected (see below). Deeper well depth does not change the model outcomes, which are governed by the thickness and permeability of saturated aquifer rather than its depth.
Depth to Groundwater	182$\pm$13 feet bgs	425 to 438 feet bgs	Actual depth to water is >200 feet deeper than modeled. Previously interpreted depth to groundwater appears to correspond to top of partially saturated clay layer in subsurface above saturated aquifer. Presence of deeper groundwater does not change the model outcomes because the saturated thickness is within 17 percent of the predicted value, and the calculated hydraulic conductivity is above the upper end of the range of modeled values (see above). The effect of the extended range of hydraulic conductivity was tested and is discussed in this report. Field data can be used to further interpret proposed production well locations in other areas of site.
Depth to Bedrock	332$\pm$26 feet bgs	505 to 510 feet bgs	Actual depth to bedrock is at least 150 feet deeper than modeled; however, this does not change the model outcomes, which are governed by the thickness and permeability of saturated aquifer rather than its depth. Field data can be used to further interpret proposed production well locations in other areas of site.
Bedrock Geology	Granitic	Granitic	Field data show model assumption is correct.

Notes:

[1] An average value of 100 feet of saturated thickness within the valley was used in groundwater modeling to estimate the volume of water in storage within the entire valley aquifer.

[2] To provide 192 AFY, this equates to 192 acre-feet/year * 325,851 gallons/acre-foot * 1 year/365 days * 1 day/1,440 minutes = 120 gpm. Three wells providing a total of 120 gpm would need to be pumped at an average of 40 gpm each.

The results indicate that the aquifer is deeper and somewhat more permeable than expected at well site PW-1. The saturated alluvium thickness is within approximately 17 percent of the expected thickness of 150 feet at PW-1. Hydraulic conductivity was calculated using data collected during the well test by pressure transducers installed in PW-1 and OW-1. The lower end of the range of calculated hydraulic conductivity (1.4 ft/day) is within the range of hydraulic conductivity values used in the numerical model and the sensitivity analysis. The upper end of the calculated hydraulic conductivity (30 ft/day) is higher than (nearly double) the upper end of the sensitivity analysis range (16 ft/day). The effect of this higher estimate of hydraulic conductivity in combination with a higher specific yield, as shown in Appendix M, is that the newly calculated drawdown effects are even lower than previously estimated in the sensitivity analysis.

The presence of a 130- to 150-foot-thick layer of clay above the saturated zone at well site PW-1 was unexpected, but its presence does not affect the characterization of the aquifer as unconfined and does not directly affect the model predictions. The lateral extent and thickness of the aquifer and clay layer are unknown within the valley. It is possible that the saturated thickness of permeable alluvium could be less in the center of the valley if the clay layer thickens in that direction.

The measured groundwater elevation within the Soda Mountain Valley at PW-1 is approximately 90 feet higher than groundwater elevations at Soda Lake to the east. The measured direction of groundwater flow towards Soda Lake is consistent with the modeled direction of flow. The sustainable pumping rate is slightly lower than expected but could be compensated for by increasing the number of project production wells to four or five.

Because the conceptual model is generally consistent with the observed aquifer conditions as summarized in Table ES-1, there is no need to revise the conceptual or numerical groundwater models at this time. The analytical model generated using the Theis method provides a conservative estimate of groundwater drawdown outside of the valley and can be used to conservatively analyze potential impacts under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The hydrologic analysis presented in the Draft EIS/EIR (BLM and County 2013) is generally consistent with the observed aquifer properties and correctly characterizes the existing groundwater system. The numerical model should be revised prior to implementation of the GMMP so that observed values at each monitoring well can be compared with the results of the calibrated model to evaluate whether an action criterion is triggered.

1 INTRODUCTION

1.1 OVERVIEW

1.1.1 Proposed Project

Soda Mountain Solar, LLC (SMS), proposes to construct, operate, maintain, and decommission the Soda Mountain Solar Project (project), which would be located in the Soda Mountain Valley in San Bernardino County, California, about 6 miles southwest of the Town of Baker (Figure 1.1-1). The proposed project would include withdrawal of approximately 192 acre-feet per year (AFY) of groundwater during a 24- to 30-month construction period and approximately 33 AFY during project operation. Project decommissioning water use at the end of the useful life of the project would be on par with that estimated for construction, and is estimated to require about 2 years.

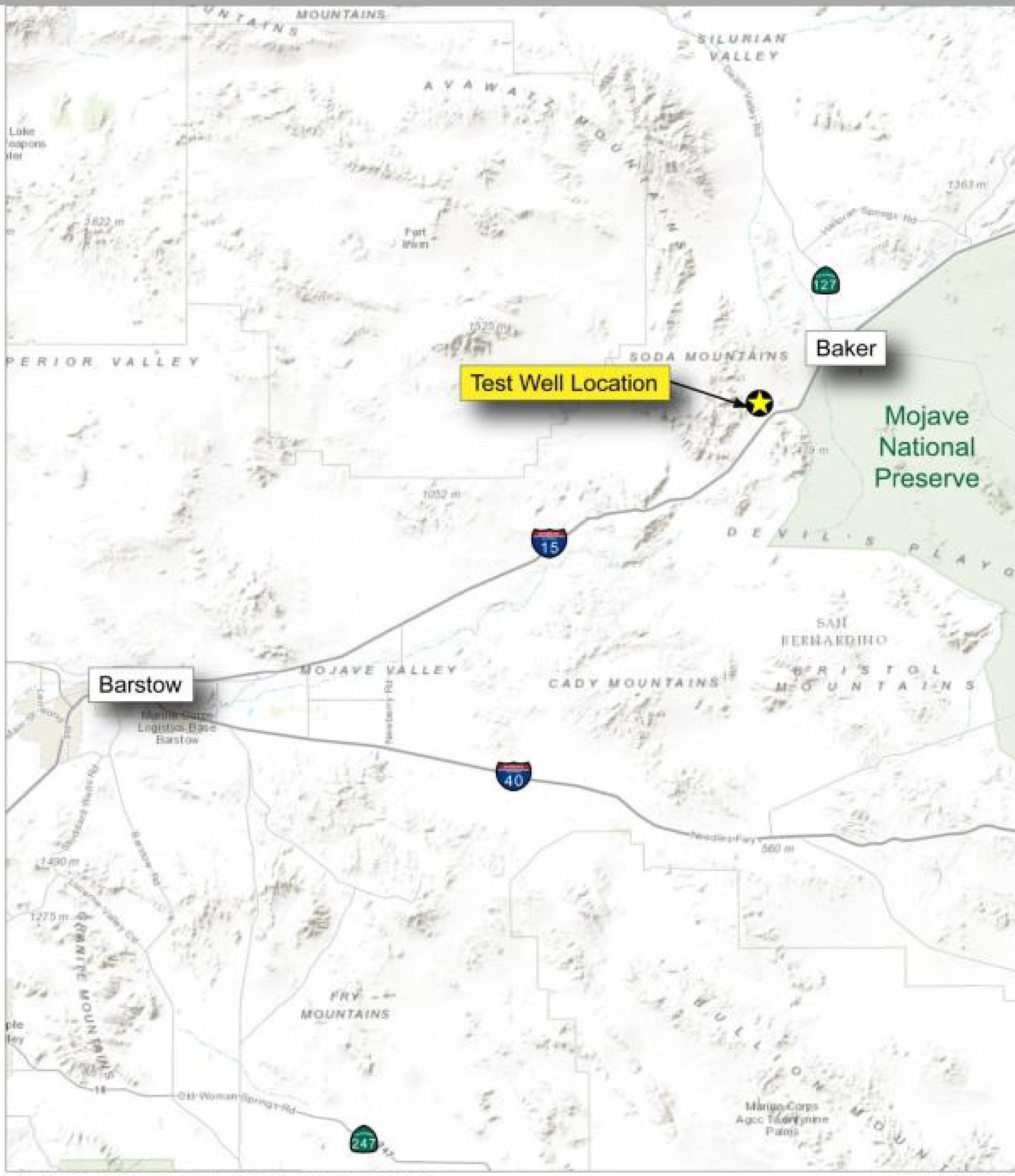
The U.S. Bureau of Land Management (BLM) requested that SMS drill a test well and perform a well test to provide data for the Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the SMS project. This report provides results of the well test performed for the SMS project. The test involved well drilling, installation, development, testing, sample collection and analysis, and data analysis. This report may also be used by the U.S. Fish and Wildlife Service (USFWS) in preparing its Biological Opinion for the project to address the potential for effects to the Mohave tui chub (*Gila bicolor mohavensis*), a federally protected species.

1.1.2 Purpose of Well Test

SMS obtained BLM authorization to construct and test a groundwater test well, groundwater observation well, and groundwater monitoring well at the project site. The drilling and well test were performed according to the procedures outlined in the *Groundwater Well Test Plan* (Test Plan; Panorama 2014a) to obtain additional scientific data on the Soda Mountain Valley aquifer and to test the existing groundwater flow model. The goals of the well test were to:

1. Determine whether there is adequate groundwater capacity within the Soda Mountain Valley to meet the construction and operational water supply needs of the project.
2. Determine the likely impacts, if any, on sensitive receptors such as the Mohave tui chub at MC Spring at Zzyzx, located more than 4 miles east of the east project boundary along the western shore of Soda Lake, and the Town of Baker groundwater supply.
3. Determine the number of wells that will be required to supply water for the project.
4. Determine total dissolved solids (TDS) concentrations in Soda Mountain Valley groundwater to evaluate the need for reverse osmosis water treatment during project operation.

Figure 1.1-1: Project Location



SOURCE: ESRI 2014 and Panorama Environmental, Inc. 2014

Scale: 1:750,000

LEGEND

Test Well Location

Miles 0 5 10 20

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5. Define the geochemistry of groundwater in the Soda Mountain Valley to evaluate the potential connectivity with MC Spring.
6. Test the assumptions of the groundwater model including hydraulic conductivity and specific yield.
7. Describe the geologic composition of the uppermost bedrock beneath the alluvial aquifer.
8. Re-run the groundwater model (if necessary) to further analyze potential effects of groundwater withdrawal to springs in the Mojave National Preserve and the Mohave tui chub.

1.1.3 Projected Water Use

SMS estimates that project construction will require 192 AFY for site compaction and dust control over a 24- to 30-month period. The proposed operational water use is estimated to be approximately 33 AFY for panel washing and dust control over the life of the project (approximately 30 years). The water volume required for project decommissioning activities would be similar to that estimated for project construction (i.e., 192 AFY). Decommissioning is estimated to require about 2 years to complete. The total water use for construction, operation, and decommissioning is estimated to be 1,854 acre-feet.

1.1.4 Mohave Tui Chub

The Mohave tui chub is a fully protected, state endangered, and federally endangered species. The Mohave tui chub's range is limited to four locales:

1. Lark Seep at China Lake Naval Air Weapons Station (North Channel, George Channel, and G1 Channel)
2. Camp Cady Wildlife Area
3. Desert Studies Center (DSC) at Zzyzx (Lake Tuendae and MC Spring)
4. Deppe Pond at the Lewis Center for Educational Research, Mojave Rivers Campus (USFWS 2009)

Suitable Mohave tui chub habitat includes specific requirements for pool configuration, food sources, water quality, and water temperature. Pools must be at least 4 feet deep to resist cattails and to stabilize temperature and dissolved oxygen content. Temperature tolerance ranges from 37 to 97 degrees Fahrenheit (3 to 36 degrees Celsius). The tui chub cannot tolerate high salt content and thus there must be a flow of freshwater into the pool to counteract high evaporation rates in the desert. Insufficient water supply to existing populations is a threat to the viability of Mohave tui chub populations. Mohave tui chub feed on aquatic invertebrates. Aquatic plants are needed for attachment of eggs and to prevent anoxic conditions in the water. Vegetation (aquatic and riparian) also provides shade to protect the fish from extreme temperatures (USFWS 2009).

The population of Mohave tui chub closest to the project area is located in Lake Tuendae and MC Spring in the Mojave National Preserve near the DSC at Zzyzx, approximately 4.5 miles east of the project area. The habitat in Lake Tuendae is managed to provide adequate habitat for the Mohave tui chub through activities such as periodic dredging of sediment and cattail removal (NPS 2001). The population of tui chub at the DSC was 1,318 fish in Lake Tuendae (where the population tends to vary by approximately 50 percent) in 2007, and 255 fish in MC Spring (where the population is stable) in 2008. Lake Tuendae is filled with water pumped from the local aquifer, whereas MC Spring's pool is fed by a natural spring. The aquifer at the project site is not known to be hydrologically connected to the aquifer(s) that supplies MC Spring and is pumped to fill Lake Tuendae. Data presented in this report support this conclusion.

1.2 WELL SITE

The Test Plan (Panorama 2014a) presented a preferred well site (PW-1) and three alternate well sites (PW-2 through PW-4) for installation of the test well, observation well, and monitoring well(s). The test well (PW-1) and observation well (OW-1) were constructed on the south side of Blue Bell Mine Road at location PW-1, shown on Figure 1.1-2. This location was selected because the existing geophysical data (TerraPhysics 2010) indicated this location would have the shallowest depth to groundwater and bedrock. Coordinates for the two wells installed at preferred well site PW-1 are provided in Table 1.2-1.[1]

Table 1.2-1: Well Site Coordinates

PW-1 Well Site	Northing[1]	Easting
PW-1	2266991.51 N	7110536.64 E
OW-1	2267177.79 N	7110516.33 E

1.3 WELL TEST

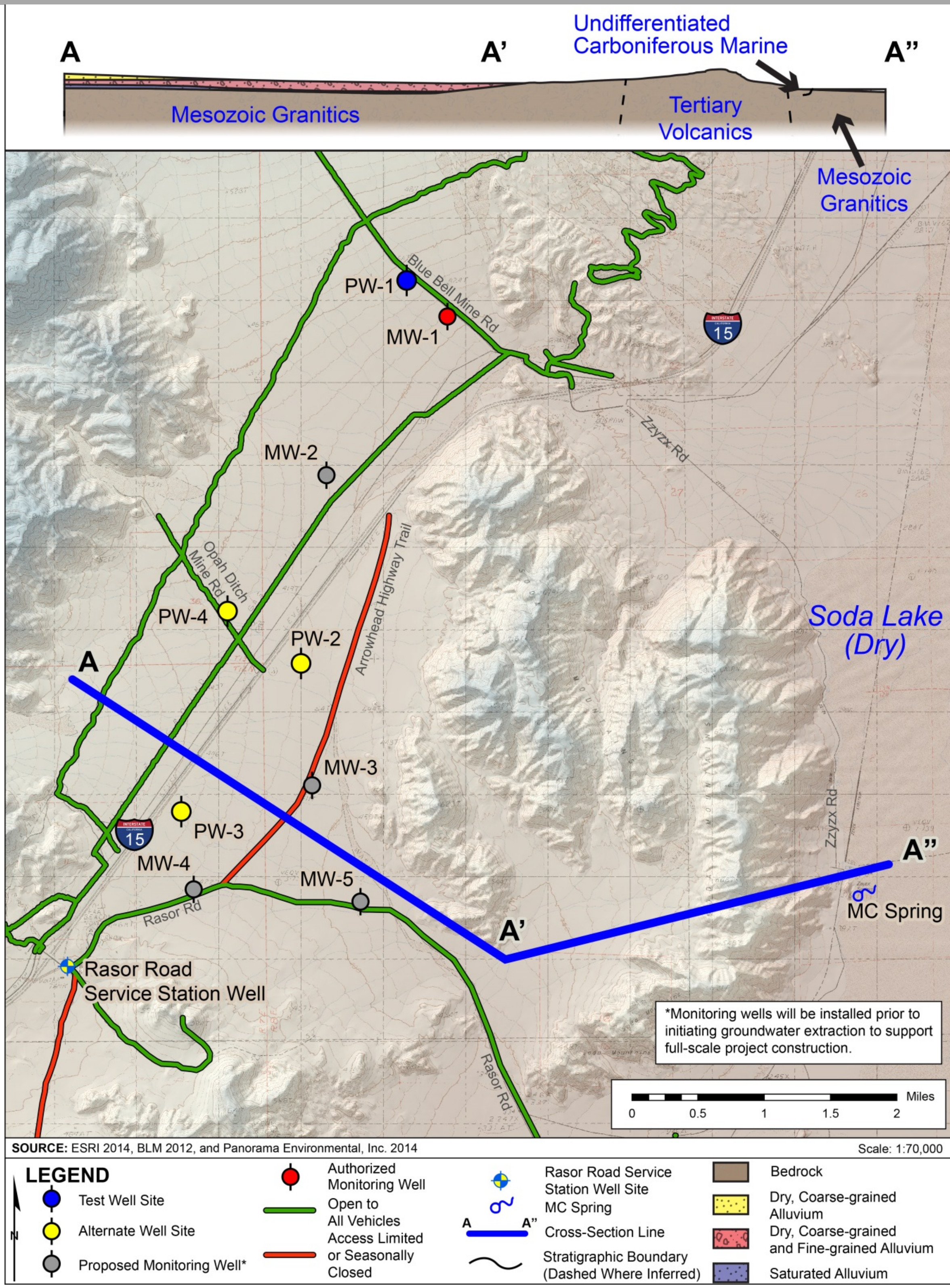
The scope of work included the following tasks:

- Constructing one groundwater test well (PW-1)[2]
- Constructing one groundwater observation well (OW-1)
- Performing a well test
- Analyzing the results of the well test
- Collecting samples and analyzing groundwater quality
- Validating the groundwater flow model for the project

[1] The authorized monitoring well associated with site PW-1 is MW-1 on Blue Bell Mine Road (Figure 1.1-2). MW-1 will be installed during a future field mobilization and is not discussed in this report.

[2] The groundwater test well was referred to as TW-1 in the Test Plan.

Figure 1.1-2: Test Well, Observation Well, and Monitoring Well Locations



Burns & McDonnell Engineering (BMcD) oversaw the field program on behalf of Panorama and SMS. Construction of one authorized groundwater monitoring well (MW-1) was also included in the scope of work; however, monitoring well construction will be performed during a future mobilization, prior to initiating project-related groundwater extraction, and will be reported under separate cover. The test well and observation well discussed herein are anticipated to be left in place if the proposed project is approved and constructed. The wells will be destroyed if the proposed project does not go forward.

Work was performed in accordance with the Test Plan and the environmental procedures required by BLM were adhered to as described in the Test Plan. Specifically, the following environmental procedures were followed and/or implemented during Test Plan implementation:

- BLM reviewed and approved the Test Plan on July 30, 2014.
- Panorama prepared and submitted a work plan for biological surveys to BLM and USFWS for approval. The work plan was approved on July 7, 2014.
- BMcD prepared a site-specific Health and Safety Plan for use in the field. The plan included information on the roles and responsibilities of project personnel, hazard identification and analysis, required personal protective equipment, site access and control, standard operating procedures, and an Emergency Action Plan.
- Panorama prepared an Environmental Training Program (ETP) and provided the ETP to BMcD to use to educate on-site personnel on the environmental protection measures for biological, cultural, paleontological, hydrologic, and recreational resources, as well as utilities and hazards. All on-site personnel signed an acknowledgement form stating that they had received and understood the training and would abide by the required environmental protection measures.
- BLM approved a Categorical Exclusion under the National Environmental Policy Act (NEPA), along with a Temporary Use Permit (TUP).
- Drilling locations and the area of maximum disturbance were identified and marked with white paint and flagging tape in conjunction with BLM.
- Peter Woodman of Kiva Biological, a BLM-approved biologist trained and certified to handle desert tortoise, performed a preconstruction biological field survey of the approved work area on August 11 and 12, 2014. Ms. Amanda Scheib, also a BLM-approved biologist trained and certified to handle desert tortoise, performed a preconstruction survey of the approved leach field area on September 26, 2014. No desert tortoise or other special-status species were observed during the preconstruction survey.
- Mr. Woodman supervised installation of desert tortoise exclusion fencing by Our Valley Fence around the approved drilling work area, as presented in the Test Plan, on August 12. Ms. Scheib supervised installation of exclusion fencing around the approved leach field discharge area on September 26. Ms. Scheib was present during surface water discharge activities during the well tests and monitored the discharge area within the leach field. No desert tortoise or other special-status species were observed during water discharge activities.

- All environmental design features, as described in Section 5 of the Test Plan (Panorama 2014a), were implemented and adhered to during performance of the field program.

1.4 REPORT ORGANIZATION

The report consists of the following sections:

1. Introduction
2. Well Construction and Testing Activities
3. Results
4. Analysis
5. Conclusions
6. Recommendations
7. References

2 WELL CONSTRUCTION AND TESTING ACTIVITIES

Well construction and testing were conducted according to the specifications in the Test Plan (Panorama 2014a), which was reviewed and approved by BLM and San Bernardino County.

2.1 WELL CONSTRUCTION

Well construction involved installation of one test well (PW-1) and one observation well (OW-1). A monitoring well (MW-1) will be drilled and constructed during a future mobilization, prior to initiating project-related groundwater extraction, and is not discussed in this report. Wells were constructed in general accordance with:

- California Department of Water Resources (DWR) Bulletin 74-81, Water Well Standards – State of California
- DWR Bulletin 74-90, California Well Standards
- County of San Bernardino Desert Groundwater Management Ordinance

Well locations are presented on Figure 2.1-1. Specific well construction procedures and details are provided in Appendix A. Supporting field documentation is included in the following appendices:

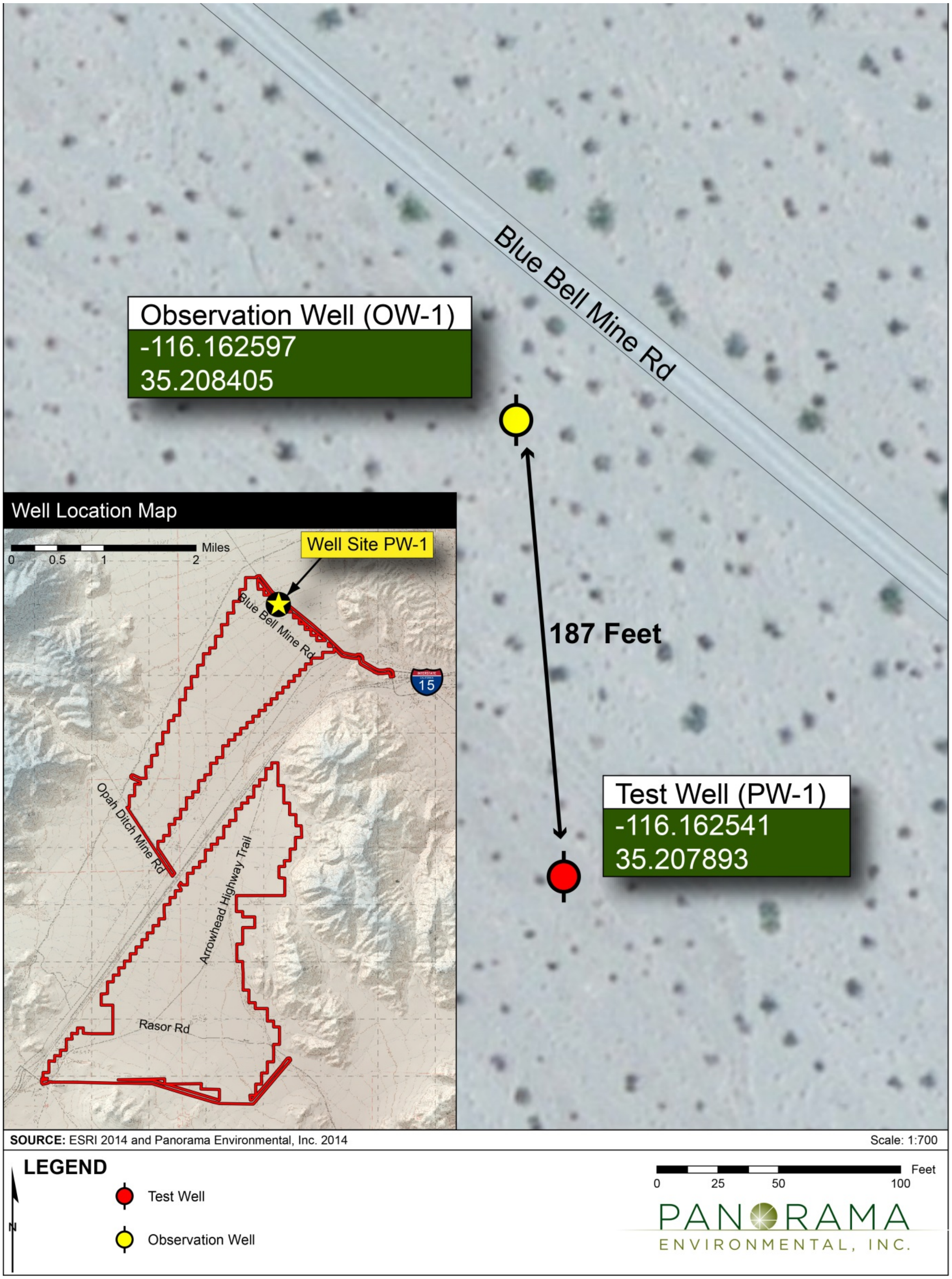
- Appendix B: Well Permits
- Appendix C: Geologic Logs and Well Construction Diagrams
- Appendix D: Geophysical Logs
- Appendix E: Geotechnical Analyses
- Appendix F: Well Development Records
- Appendix G: Survey Data
- Appendix H: Paleontologic Report

2.2 WELL TESTING

2.2.1 Water Level Measurement

BMcD monitored water levels in the test well and observation well to establish baseline conditions and water level trends prior to performing the well test. Baseline monitoring was conducted for 1 day prior to starting the aquifer test, on October 4, 2014.

Figure 2.1-1: Well Location Map



Depth to groundwater was monitored automatically using pressure transducers and manually using conductivity-based, hand-held water level meters. Pressure transducers connected to vented cables (to correct for barometric pressure fluctuations) were installed in PW-1 and OW-1 on October 4, 2014.

2.2.2 Step-drawdown Well Test

A step-drawdown well test consisting of three approximately 90-minute steps was performed in the test well on October 5, 2014. National Exploration, Wells, and Pumps (NEWP), the drilling contractor, installed a submersible test pump in the test well. A discharge pipe was connected to the pump to convey extracted groundwater from the pumped well to a temporary storage tank installed adjacent to the well. A pressure transducer was installed above the pump within the water column of the pumped well to continually monitor water levels.

Each step was performed sequentially at progressively higher pumping rates. The pumping rates used for the test well were 9 gpm, 16 gpm, and 26 gpm. Water levels were monitored during the test using pressure transducers. Manual water level measurements also were recorded periodically. Pumping rates were measured by taking instantaneous readings of a flow meter and by using a flow totalizer.

The test was initiated by turning on the pump to the lowest anticipated pumping rate. The pumping rate was monitored to ensure it was relatively constant during the step. A flow totalizer and stop watch were used to measure and verify pumping rates. The totalizer readings were also used to calculate average pumping rates during each step. Flow rates were recorded on field forms. Water levels were automatically and manually measured in PW-1 and OW-1 using pressure transducers and a water level meter. Manual water level measurements were recorded on field forms. After about 90 minutes had passed and the water level in PW-1 had largely stabilized, the pumping rate was increased to the next higher rate. The same procedure was followed for the next step as was followed for the first step, as well as for the final step of the test.

Following completion of the last of the three steps, the pump was turned off and the water level in PW-1 was allowed to return to equilibrium. Water levels in PW-1 and OW-1 were monitored during the recovery process to provide additional data used in the hydraulic analysis. Water levels were monitored until they returned to at least 95 percent of pre-test water levels, before starting the constant-rate test on October 6.

Discharge of extracted groundwater was discussed with and approved by the Lahontan Regional Water Quality Control Board (LRWQCB) (Cass 2014b). Extracted groundwater was discharged to the land surface over a broad area using a sewer leach field distribution system installed by the subcontractor Rain For Rent about 500 feet downslope from the well site work area. The discharge was routed through three perforated leach field distribution pipes during the test to disperse the discharge and avoid overwatering any one area or causing erosion. Storage tanks were used to temporarily store extracted groundwater to manage the discharge.

Discharge was transferred from the storage tanks to conveyance pipes and the valves were opened to direct flow away from the site to multiple dispersal areas.

2.2.3 Constant-rate Well Test

Data from the step-drawdown test were used to select a sustainable pumping rate for the constant-rate test of 26 gpm. The goals of the constant-rate test were to:

- Test the performance of the test well at as high a rate as is sustainable
- Calculate aquifer parameter values of hydraulic conductivity, transmissivity, specific capacity, and storage coefficient using measured drawdown data

The constant-rate test was performed over a continuous 72-hour period between 9:20 a.m. on October 6, 2014, and 11:03 a.m. on October 9, 2014. BMcD measured the static water levels in PW-1 and OW-1 prior to the start of pumping in PW-1. The test was initiated by turning on the pump to the selected pumping rate. An in-line flow totalizer was monitored at the wellhead to estimate average pumping rate over time. Pumping rates were periodically adjusted to maintain an approximately constant discharge rate. Water levels in PW-1 and OW-1 were monitored throughout the pumping period using dedicated pressure transducers and conductivity-based, hand-held water level meters. Flow rates and manual water level measurements were recorded on field forms.

Water quality parameters (i.e., temperature, pH, oxidation-reduction potential [ORP], dissolved oxygen [DO], turbidity, and specific conductance) were periodically measured in PW-1 (e.g., every 2 to 3 hours) by routing a low-flow water sample from a sample spigot and using calibrated field probes and a flow-through cell to measure the parameter values. Field-measured water quality parameter measurements were recorded on field forms. Water discharge was performed as described for the step-drawdown test (Section 2.2.2).

2.2.4 Water Quality Sampling and Analysis

Groundwater samples were collected from a spigot connected to the discharge pipe of the observation well (during well development) and the test well (during the constant-rate test) during the following intervals:

- Approximately 4 hours following start-up of pumping during well development at OW-1 (one sample)
- During the last step of the step-drawdown well test at PW-1 (one sample)
- At approximately 24, 48, and 72 hours following start-up of pumping during the constant-rate well test at PW-1 (three samples)

The samples were decanted into laboratory-provided sample containers, labeled, sealed in plastic bags, and placed in an ice-chilled cooler. The samples were submitted for analysis to AccuTest Laboratory, of San Jose, California, a state-certified analytical laboratory, under chain-of-custody protocols. In addition, the sample collected after 72 hours of pumping during the constant-rate test was submitted for isotope analysis to Isotope Tracer Technologies, Inc. (IT2), of Waterloo, Ontario, which specializes in isotope analyses. The analytical program is summarized in Appendix A.

2.2.5 Recovery Water Level Monitoring

After cessation of pumping at about 11:03 a.m. on October 9, water level recovery was monitored in PW-1 and OW-1 for 20.4 hours, through 7:27 a.m. on October 10. Water levels in PW-1 and OW-1 were monitored throughout the recovery period using dedicated pressure transducers and conductivity-based, hand-held water level meters. Recovery monitoring data constitute an independent dataset for estimation of aquifer properties and identification of boundary conditions. Data from recovery monitoring in test wells commonly are considered more reliable than data collected during constant-rate tests because water level turbulence associated with pumping does not occur.

3 RESULTS

3.1 GEOLOGY

Geologic logs for PW-1 and OW-1 are provided in Appendix C and present information on the alluvial sediments and weathered bedrock geology at PW-1 and OW-1. Well schematics for PW-1 and OW-1 are presented as Figures 3.1-1 and 3.1-2, respectively. Geophysical logs were generated after pilot hole drilling and present information on alluvium and bedrock geology (gamma logs and spontaneous potential logs), presence of permeable zones (resistivity logs), presence of saturated conditions (sonic logs) and borehole diameter (caliper logs). Geophysical logs are provided in Appendix D. The well locations are presented on Figure 2.1-1. The geologic and geophysical logs were evaluated to assess the following geologic parameters:

- Alluvium geology (geologic composition, permeability, and stratigraphy)
- Depth to bedrock
- Bedrock geology

The geophysical logs correlate well with the geologic logs generated for the two borings.

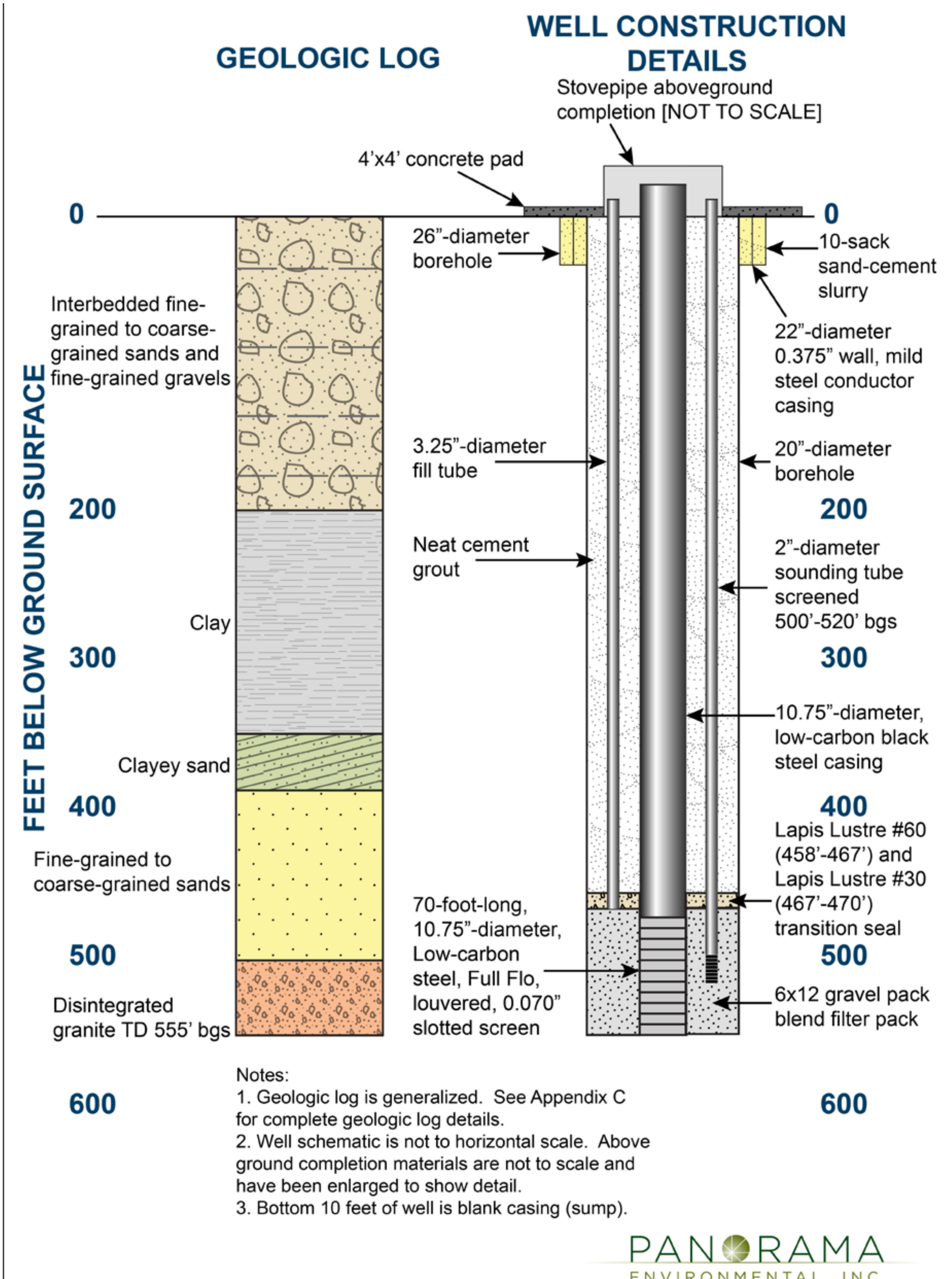
3.1.1 Aquifer Geology

The upper approximately 200 feet of sediment was observed to dominantly consist of alluvium composed of fine- to coarse-grained sands and gravels. A clay layer was encountered in PW-1 from approximately 200 to 350 feet bgs, and in OW-1 from approximately 230 to 360 feet bgs. The material below the clay layer consists of fine- to medium-grained clayey sands, which transition to fine- to coarse-grained, well-graded sands with minimal (i.e., less than 5 percent) gravel and fines at a depth of approximately 400 feet bgs in PW-1 and 410 feet bgs in OW-1. The base of the sand aquifer was logged at approximately 505 feet bgs in PW-1 and at 510 feet bgs in OW-1. Weathered bedrock was logged below the sand aquifer with the character of medium to coarse sand, variably consolidated depending on the degree of weathering.

3.1.2 Depth to Bedrock

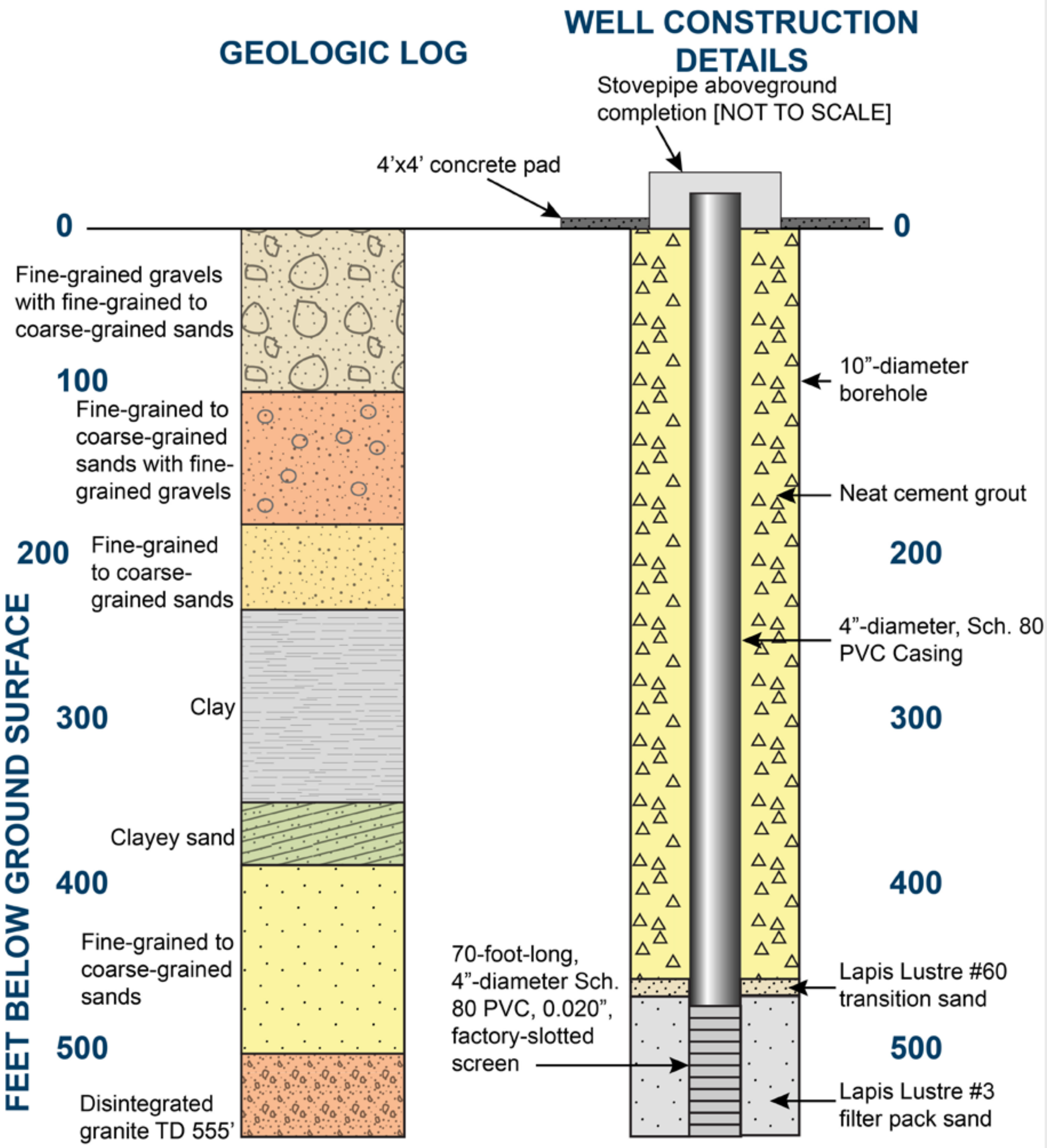
Bedrock was encountered beginning at approximately 505 feet bgs in the test well pilot hole and at 510 feet bgs in the observation well bore, and extended to total depth, based on observation of drill cuttings and changes in drilling rate (see Appendix C). Drilling became harder and the drill rods began bouncing and kicking at approximately 505 feet bgs in the test well bore and did so at intermittent intervals until the total depth of 555 feet bgs was attained. Similar observations were recorded for the observation well bore between 510 feet bgs and the total depth of 555 feet bgs. Subangular to subrounded, medium to coarse sand with the character of disintegrated granite dominated the drill cuttings below 505 feet bgs in the test well bore and

Figure 3.1-1: PW-1 Well Schematic



SOURCE: Panorama Environmental, Inc. 2014

Figure 3.1-2: OW-1 Well Schematic



Notes:
1. Geologic log is generalized. See Appendix C for complete geologic log details.
2. Well schematic is not to horizontal scale. Above ground completion materials are not to scale and have been enlarged to show detail.
3. Bottom 10 feet of well is blank casing (sump).

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SOURCE: Panorama Environmental, Inc. 2014

510 feet bgs in the observation well bore. Varying degrees of weathering resulted in hard to medium layers with respect to the ease of drilling.

3.1.3 Bedrock Geology

Weathered, decomposed granitic bedrock was encountered in both well bores beginning at a depth of approximately 505 to 510 feet bgs. The zone from 505 feet bgs in PW-1 and 510 feet bgs in OW-1 to total depth is characterized by medium- to coarse-grained, granitic sands that likely represent a transitional zone where the granitic bedrock is decomposed and weathered. The grain mineralogy appeared to be typical of granitic rock. Particles were subangular to subrounded. No evidence of carbonate bedrock was observed.

3.2 HYDROGEOLOGY

Initial estimates of depth to water and character of the saturated zone were made by evaluating the geologic and geophysical logs (Appendix C and Appendix D, respectively). Depth to groundwater was measured using an electronic sounder and pressure transducers during the well testing phase of the field program. The baseline depth to water measurements were made following well development and water level re-equilibration (i.e., return to static water levels).

3.2.1 Groundwater Elevations

Baseline Groundwater Elevations

The water table was not observed during pilot hole drilling of PW-1 or drilling of OW-1 due to the use of mud rotary technology. Geophysical logs therefore were used to initially identify the water table. Sonic logging indicated the water table was present at approximately 426 feet bgs in the test well bore and at 435 feet bgs in the observation well bore.

Measured static depth to water in PW-1 and OW-1 after well construction and development were completed was 431 feet and 438 feet below top of casing (btoc; 428 and 435 feet bgs), respectively. These water depths correspond to water table elevations of approximately 1,009 feet above mean sea level (amsl) in both PW-1 and OW-1.

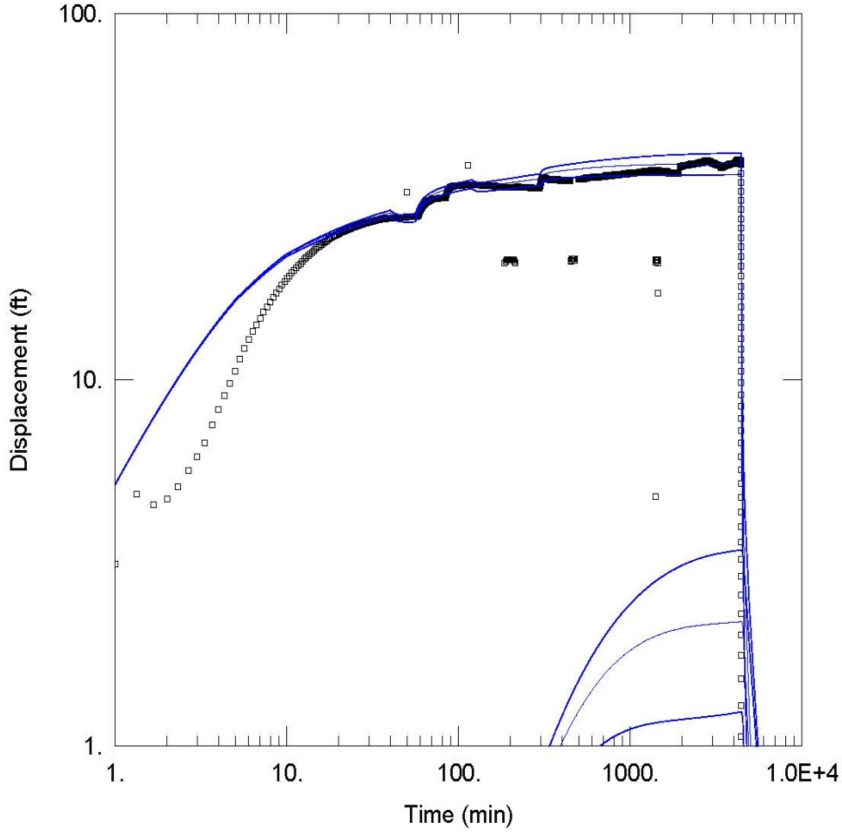
Well Test Groundwater Elevations

Results from the step-drawdown test are summarized in Table 3.2-1. Water level changes during the constant-rate test in PW-1 and OW-1 are plotted on Figures 3.2-1 and 3.2-2, respectively. Results from the constant-rate aquifer test are summarized in Table 3.2-2.

Table 3.2-1: PW-1 Step-Drawdown Well Test Data Summary

Step	Duration (minutes)	Pumping Rate (gpm)	Drawdown (feet)	Specific Capacity (gpm/foot drawdown)
1	89	9.1	13.2	0.69
2	120	16	27.6	0.58
3	87	26	42.9	0.61

Figure 3.2-1: PW-1 Constant-rate Well Test Data Plot



Time (min)

PW-1 SODA MT. SOLAR PUMPING AND RECOVERY TEST OCTOBER 6-10, 2014

Data Set: C:\...\ow-1_1410080943_PW-1aqt2.aqt
Date: 10/14/14 Time: 21:54:35

PROJECT INFORMATION

Company: Burns & McDonnell
Client: Panorama/Soda Mt Solar
Location: Soda Mt. Valley
Test Well: PW-1
Test Date: 10/6/14

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 0.2268

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0

Observation Wells

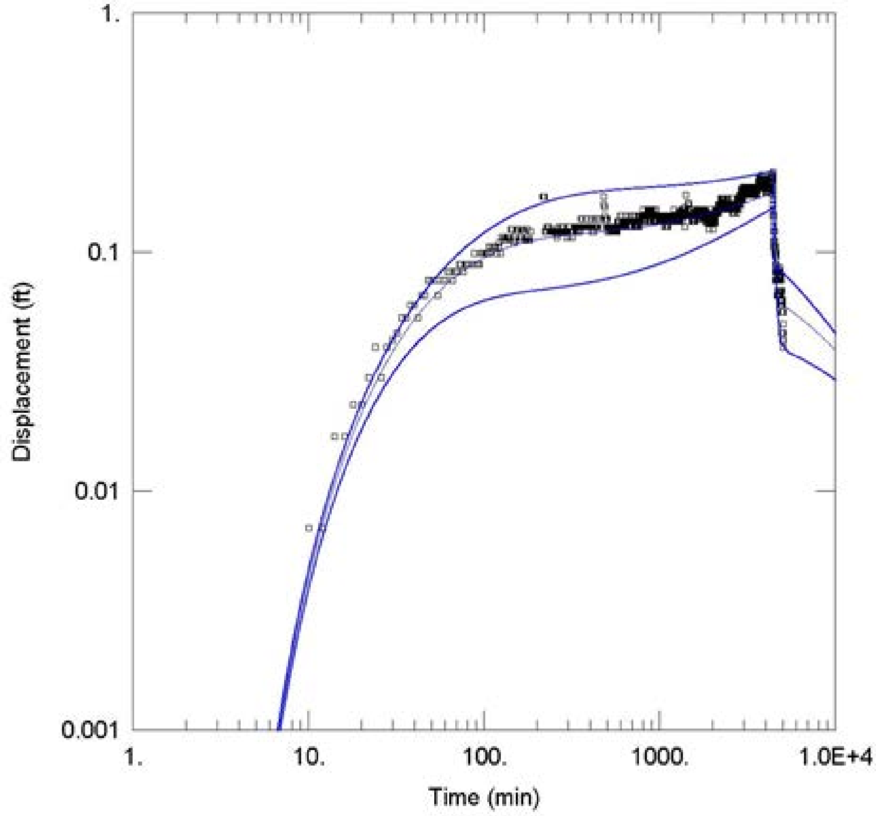
Well Name	X (ft)	Y (ft)
PW-1	0	0
OW-1	132	132

SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 0.1242 ft^2/min
Sy = 0.3215
Sw = 0.
r(c) = 0.416 ft
S = 0.003162
Kz/Kr = 0.2268
r(w) = 0.83 ft
alpha = 100. min^{-1}

Figure 3.2-2: OW-1 Constant-rate Well Test Data Plot



OW-1 SODA MT. SOLAR PUMP AND RECOVERY TEST, OCTOBER 6-10, 2014

Data Set: C:\...\ow-1_1410080943_PW-1aqt1.aqt
Date: 10/14/14 Time: 21:34:41

PROJECT INFORMATION

Company: Burns & McDonnell
Client: Panorama/Soda Mt Solar
Location: Soda Mt. Valley
Test Well: PW-1
Test Date: 10/6/14

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 0.1794

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ OW-1	132	132

SOLUTION

Aquifer Model: Unconfined Solution Method: Moench

T = 2.713 ft^2/min
Sy = 0.2506
Sw = 0.
r(c) = 0.416 ft

S = 0.006937
ß = 0.4
r(w) = 0.83 ft
alpha = 1.0E+30 min^{-1}

Table 3.2-2: PW-1 Constant-rate Well Test Data Summary		
Parameter	**PW-1**	**OW-1**
Static Depth to Water	431.4 feet btoc	438.2 feet btoc
Static Water Level Elevation	1009.1 feet amsl	1,008.9 feet amsl
Maximum Drawdown	39.9 feet	0.21 feet
Total Volume of Water Extracted	129,688 gallons	N/A
Average Pumping Rate	26 gpm	N/A
Recovery Monitoring Period	20.4 hours	20.4 hours
amsl = above mean sea level btoc = below top of casing (sounding tube for PW-1) gpm = gallons per minute N/A = not applicable		

3.2.2 Aquifer Character

The water table was observed in a fine- to medium-grained sand located approximately 80 feet below a thick clay layer. The clay layer was logged between depths of 200 and 350 feet bgs in the test well bore, and between depths of 230 and 360 feet bgs in the observation well bore (Appendix C). Fine- to coarse-grained sand was logged from the base of the clay layer (350 feet bgs in the test well and 360 feet bgs in the observation well) to the top of the bedrock (505 bgs in the test well and 510 feet bgs in the observation well). The uppermost portion of this underlying sand unit was unsaturated, and the lower portion of the sand unit was saturated. The aquifer is unconfined because of the presence of an unsaturated zone in the upper portion of the sand layer. The clay layer in the stratigraphic column observed at well site PW-1 is separated from the water-bearing zone (the aquifer) by a zone of unsaturated sands and, therefore, does not act as a confining layer.

3.3 WELL YIELD

The step-drawdown well test indicated that the pumping well at PW-1 could sustain a yield of approximately 26 to 27 gpm. The constant-rate well test was conducted with a sustained yield of approximately 26 gpm. The water level within the pumping well was drawn down about 40 feet and equalized at approximately 471 to 472 feet bgs during the constant-rate well test, indicating that the well can sustain production of 26 gpm. The specific capacity of the well during the constant-rate test was approximately 0.61 gpm per foot of drawdown.

3.4 WATER QUALITY

3.4.1 Development Sample

A groundwater sample was collected from well OW-1 on September 17, 2014, during well development. Analytical results are presented in Table 3.4-1. Laboratory data sheets are included in Appendix J.

3.4.2 Step-drawdown Test Sample

A groundwater sample was collected from well PW-1 on October 5, 2014, at the end of the step-drawdown well test. Analytical results are presented in Table 3.4-1. Laboratory data sheets are included in Appendix J.

3.4.3 Constant-rate Test Samples

Groundwater samples were collected from well PW-1 on October 7, 8, and 9, 2014, after approximately 24, 48, and 72 hours of pumping during the constant-rate well test, respectively. Analytical results are presented in Table 3.4-1 (general chemistry) and Tables 3.4-2a, 3.4-2b, and 3.4-2c (isotopes; PW-1 72-hour constant-rate sample only). Laboratory data sheets are included in Appendix J.

Table 3.4-1: Groundwater Sample Analytical Results: General Chemistry

Analyte	Analytical Method (EPA unless specified)	Screening Value (mg/L unless specified)[1]	Concentration (mg/L unless specified)				
			Develop-ment Sample	Step-drawdown Test Sample	Constant-rate Test Samples		
Well			**OW-1**	**PW-1**	**PW-1**	**PW-1**	**PW-1**
Sample Date			**9/17/14**	**10/5/14**	**10/7/14**	**10/8/14**	**10/9/14**
Field Measurements							
pH	YSI 556 MPS meter	6.5-8.5 SU	8.14 SU	8.61 SU	8.38 SU	8.37 SU	8.36 SU
Specific Conduc-tance	YSI 556 MPS meter	--	1,924 µS/cm	2,066 µS/cm	2,058 µS/cm	2,047 µS/cm	2,035 µS/cm
ORP	YSI 556 MPS meter	--	72.2 mV	82.2 mV	-1.8 mV	-19.2 mV	-71.5 mV
Tempera-ture	YSI 556 MPS meter	--	33.08 °C	33.11 °C	31.73 °C	32.63 °C	32.88 °C
DO	YSI 556 MPS meter	--	2.36	2.13	0.90	0.09	0.05
Turbidity	Hanna 98703 Turbidi-meter	5.0 NTU	393 NTU	549 NTU	5.04 NTU	1.27 NTU	1.28 NTU

Table 3.4-1 (*Continued*): Groundwater Sample Analytical Results: General Chemistry

Analyte	Analytical Method (EPA unless specified)	Screening Value (mg/L unless specified)[1]	Concentration (mg/L unless specified)				
			Development Sample	Step-drawdown Test Sample	Constant-rate Test Samples		
Laboratory Analysis							
TDS	SM 2540	500	1,140	1,260	1,250	1,250	1,250
Total Nitrate/ Nitrite (as N)	SM 4500-NO3	--	2.6	2.0	2.2	1.9	2.0
Carbonate/ Bicarbonate alkalinity	SM 2320B[1]	--	83.6	60.4	50.7	59.3	55.4
Sulfate	300.0	250	369	446	446	429	429
Chloride	300.0	250	292	241	243	236	239
Calcium	6010B	--	34.7	46.5	40.3	39.7	39.8
Magnesium	6010B	--	6.69	6.22	<5	<5	<5
Sodium	6010B	--	346	347	359	358	346
Potassium	6010B	--	<10	<10	<10	<10	<10

Notes:

[1] Secondary drinking water regulation from Code of Federal Regulations, Title 40, Chapter I, Part 143, National Secondary Drinking Water Regulations, except where noted.

[2] Maximum Contaminant Level from Code of Federal Regulations, Title 40, Chapter I, Part 141, National Primary Drinking Water Regulations.

°C = degrees Celsius	mV = millivolt	SM = standard method
mg/L = milligrams per liter	NTU = Nephelometric turbidity unit	SU = standard unit
µS/cm = microSiemens/centimeter	N = nitrogen	TDS = total dissolved solids

The majority of the isotope data are reported as per-mil (‰) relative to recognized standards, as shown in Tables 3.4-2a, 3.4-2b, and 3.4-2c, except as noted.

Table 3.4-2a: PW-1 Groundwater Sample Analytical Results: Deuterium, Oxygen-18, and Tritium

Analyte	Average (‰)	Standard Deviation	Standard
δ^2H (deuterium)	-88.5	0.6	VSMOW[1]
$\delta^{18}O$ (oxygen-18)	-11.18	0.05	VSMOW[1]
E^3H (tritium)	<0.8 TU	0.7	--

Note:

[1] VSMOW: Vienna Standard Mean Ocean Water, 0‰ δ^2H and 0‰ $\delta^{18}O$ (de Groot 2004).

‰ = per-mil

TU = tritium units

Table 3.4-2b: PW-1 Groundwater Sample Analytical Results: Carbon-13 and Sulfur-34

Analyte	Result (‰)	Repeat Result (‰)	Standard
$\delta^{13}C$ (DIC) (carbon-13)	7.0	7.2	VPDB[1]
$\delta^{13}C$ (DOC) (carbon-13)	-22.3	-22.9	VPDB[1]
$\delta^{34}S$ (sulfur-34)	6.3	7.1	VCDT[2]

Notes:

[1] VPDB: Vienna Pee Dee Belemnite standard of 11.2372% based upon rock from the Pee Dee Belemnite formation in South Carolina, USA (de Groot 2004).

[2]VCDT: Vienna Canyon Diablo Troilite, 0‰ $\delta^{34}S$ (de Groot 2004).

‰ = per-mil

DIC = dissolved inorganic carbon

DOC = dissolved organic carbon

Table 3.4-2c: PW-1 Groundwater Sample Analytical Results: Carbon-14

Analyte	Fraction of Modern (pmc, %)	Standard Deviation	Standard
^{14}C (DIC) (carbon-14)	8.093	0.064	0‰

‰ = per mil

DIC = dissolved inorganic carbon

pmc = percent modern carbon

3.5 WASTE CHARACTERIZATION

The composited soil samples collected from the soil bins were analyzed for CAM 17 metals and compared to the respective Total Threshold Limit Concentrations (TTLCs). Soil sample analytical data are summarized in Table 3.5-1. Laboratory data sheets are included in Appendix J. All concentrations were less than the respective TTLCs; therefore, the soil was classified as nonhazardous and disposed of accordingly.

Table 3.5-1: Soil Sample Analytical Results

Analyte	EPA Analytical Method	Concentration (mg/kg)	TTLC (mg/kg)
Antimony	6010B	<0.4	500
Arsenic	6010B	0.860	500
Barium	6010B	13.6	10,000
Beryllium	6010B	<0.2	75
Cadmium	6010B	<0.2	100
Chromium (total)	6010B	2.26	2,500
Cobalt	6010B	0.893	8,000
Copper	6010B	1.56	2,500
Lead	6010B	2.12	1,000
Mercury	7470A	<0.002	20
Molybdenum	6010B	<2.0	3,500
Nickel	6010B	1.15	2,000
Selenium	6010B	<0.4	100
Silver	6010B	<0.4	500
Thallium	6010B	<0.4	700
Vanadium	6010B	7.07	2,400
Zinc	6010B	7.87	5,000

EPA = U.S. Environmental Protection Agency
mg/kg = milligrams per kilogram
TTLC = Total Threshold Limit Concentration

3.6 COMPLIANCE WITH PROTECTIVE MEASURES

3.6.1 Biological and Paleontological Survey Results

No special-status species were observed during biological surveys. The biological survey report is provided in Appendix K. No potentially significant paleontological resources were observed in the test well or observation well soil cuttings. The paleontological resource report is provided in Appendix H.

3.6.2 Other Protective Measures

All protective measures outlined in the Test Plan were complied with during the well test. A summary of the protective measures and compliance process is provided in Appendix L.

4 ANALYSIS

The results summarized in Section 3 were analyzed to calculate the aquifer hydraulic parameters and projected drawdown at distance from the test well site. The geologic conditions and hydraulic parameters were then compared to the model assumptions to evaluate the suitability of the conceptual and numerical groundwater models in simulating observed conditions.

4.1 HYDRAULIC PARAMETERS

4.1.1 Initial Data Processing and Analysis

Manually collected data (i.e., manually collected water levels, flow rates, and flow volumes) were hand-entered into a spreadsheet file from field records. Automatically collected data (i.e., water levels collected by transducers) were uploaded into a spreadsheet file. All data were tabulated, organized, and labeled appropriately.

Water level data, flow rates, and other aquifer data collected from the constant-rate test were post-processed using Excel and imported into the aquifer test analysis software program AQTESOLV for Windows 95/98/Me/NT/XP/Visa, version 4.50 – Professional (Hydrosolve 2014) for analysis. Plots of drawdown and recovery water level data were evaluated to identify important hydraulic parameters such as hydraulic conductivity (K), transmissivity (T), and specific yield and to evaluate the potential presence of hydraulic boundary conditions. Drawdown data from the test well and observation well collected during the pumping portion of the constant-rate test were analyzed using the Moench (1997) method for unconfined conditions, storage in the well, recovery, and partial penetration of the aquifer.

4.1.2 Hydraulic Parameter Calculation

Hydraulic conductivity and specific yield were calculated and used to verify and enhance the groundwater modeling analysis conducted for the project. The Moench (1997) method was used for the analysis because it has the ability to account for storage in the well and for partial penetration of the aquifer (i.e., well does not screen entire thickness of aquifer), and can simultaneously analyze the recovery data and pumping data. A summary of the calculated hydraulic parameters is presented in Table 4.1-1. Calculations are shown in Appendix M.

Data from the observation well and test well yielded substantially different values for transmissivity (T), as shown in Table 4.1-1. This is not an unusual result to observe with respect to pumped well and observation wells because the pumped well is affected strongly by the near-well conditions, whereas the observation well integrates aquifer conditions over a broader area between the pumped well and the observation well. The test well (PW-1) data yielded a T

Table 4.1-1: Calculated Hydraulic Parameter Values			
Well	**Hydraulic Conductivity (ft/day)**	**Transmissivity (ft^2/day)**	**Specific Yield**
PW-1	1.4	179	0.3
OW-1	30	3,700	0.25
Geometric Mean	**6.5**	**814**	N/A

Notes:

1 The average pumping rate in PW-1 during the constant-rate test was 26 gpm.

2 Recovery monitoring was conducted for 21 hours in PW-1 and OW-1.

3 Hydraulic conductivity was calculated by dividing transmissivity by 125 feet, which is considered a conservative aquifer thickness based on measured thickness at OW-1 and PW-1; the full aquifer thickness likely extends deeper into the disintegrated granite.

ft/day = feet per day

ft^2/day = square feet per day

gpm = gallons per minute

N/A = not applicable

value of 187 square feet per day (ft^2/day), which was much smaller than the value of 3,700 ft^2/day yielded by observation well (OW-1) data. Observation well data generally are judged to be of higher quality for analysis because they integrate data over a broader area, between the pumped well and the observation well; also, there is no interference from turbulence inside the observation well caused by pumping, which typically results in more accurate data. However, because the drawdown at OW-1 was so small (0.2 feet), measurement errors can become important and can reduce the accuracy of the solution. Because there are positive and negative factors affecting OW-1 and PW-1 data, both values of T are considered to be useful in estimating the value of T in the aquifer. The geometric mean value of T from both wells, 814 ft^2/day, is judged to be the best estimator of the true value of T. Similarly, the hydraulic conductivity, equal to T divided by the saturated thickness, 125 feet, ranges from 1.4 to 30 feet per day (ft/day), depending on which dataset is used (test well or observation well). The geometric mean K value of 6.5 ft/day is judged to be the best estimate of the hydraulic conductivity of the aquifer. The specific yield value had a much closer alignment between the two wells, with values of 0.25 and 0.3.

4.1.3 Calculation of Drawdown at MC Spring

Theis Method

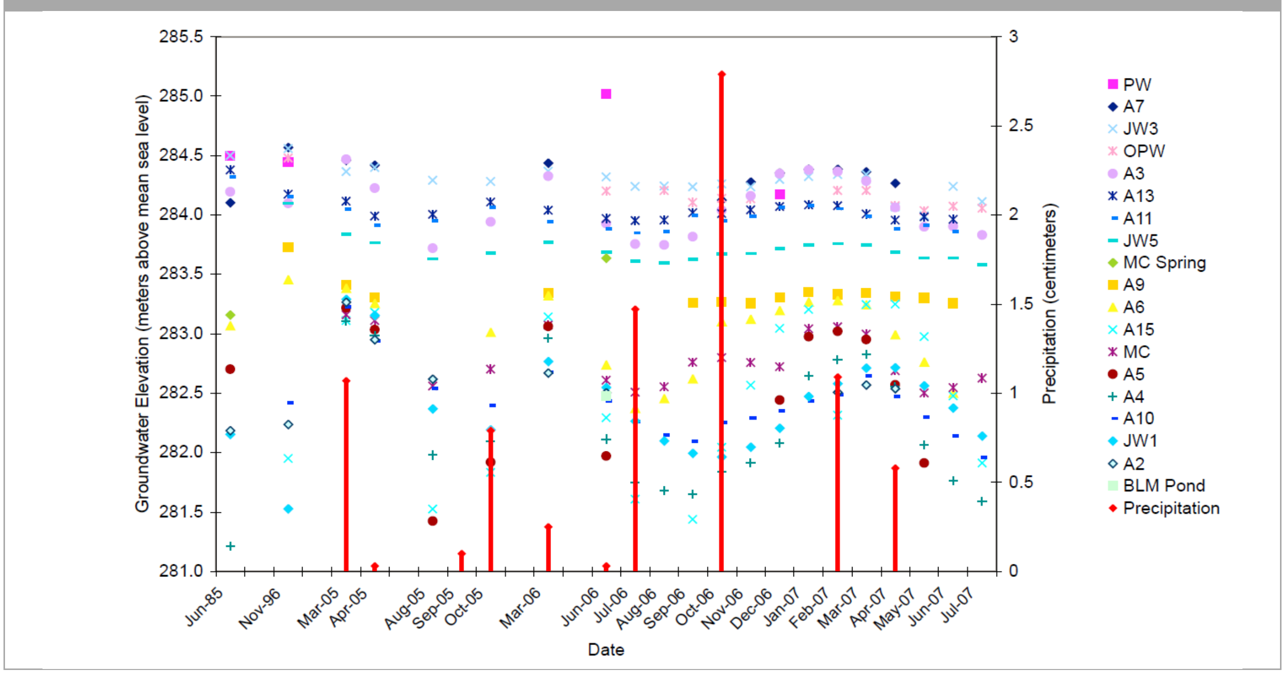
The Theis method (1935), with the value of hydraulic conductivity calculated from the well test, was used to calculate the potential effects of long-term project pumping. This method predicts the amount of drawdown expected at any selected distance from the pumped wells, and is not restricted by the conditions in the groundwater flow model such as the model domain or presence of distant bedrock wall boundaries. This method predicts the drawdown effects as if there were no bedrock boundaries, and provides a conservative analysis of potential impacts through bedrock because low-permeability bedrock would be expected to reduce the rate of decline in groundwater levels relative to a highly permeable alluvial aquifer. The impacts to groundwater resources within and outside of the Soda Mountain Valley can be conservatively estimated using this analytical method and without expanding the 3-dimensional groundwater model outside of the valley.

Drawdown at MC Spring

The Theis equation predicts drawdown of 0.0000068 feet at MC Spring after 3 years of construction groundwater pumping and less than 0.021 feet (1/4 inch) at MC Spring after 30 years of operation using the conservative high-end value for transmissivity. This amount of drawdown is substantially smaller than the water level fluctuations that occur due to seasonal variations, which vary by approximately 0.8 to 1.6 feet (0.25 to 0.5 meters) seasonally at MC Spring and in the alluvial groundwater wells adjacent to the spring (Barthel 2008). Figure 4.1-1 shows the water levels at MC Spring and groundwater wells at Zzyzx.

Construction or decommissioning-phase drawdown would equate to 0.00085 percent of the low-end estimate of seasonal variations (0.8 feet), and operation-phase drawdown would equate to 2.6 percent of the low-end estimate of seasonal variations. A change in water level of 0.021 feet is also below the practical limits of water level measurement and detection. While the predicted change in water levels at MC Spring is small, it is also overstated because the water level declines would be concentrated within the Soda Mountain Valley due to the presence of low-permeability bedrock at the valley margins. The potential declines in groundwater levels at MC Spring would therefore be much less than 0.021 feet and not measurable relative to natural variation.

Figure 4.1-1: MC Spring and Water Well Water Levels over Time at Zzyzx



Source: Barthel 2008

These results from the Theis method are consistent with the previous calculations (see Sensitivity Analysis) in that they show the lack of potential impact of the project to groundwater levels at MC Spring, or at Baker, which is even more distant.

Drawdown calculations using the Theis method and specific yield and hydraulic conductivity values derived from the well test are presented in Appendix M.

Conservative Assumptions of Theis Equation
Theis assumes a uniform aquifer to estimate the drawdown at a distance from the well, and assumes there are no hydraulic boundaries imposed by such features as the Soda Mountains that lie between the spring and the project site. Hydraulic boundaries such as the Soda Mountains and its underlying bedrock in the subsurface, which is composed of low-permeability material, serve as a barrier to groundwater flow. This means that groundwater flow from the Soda Mountain Valley toward Soda Lake to the east is retarded by the presence of this low-permeability material. This also means that groundwater pumping effects, such as drawdown that is propagating outward from a pumping well, such as would be present at the project site, would also be retarded and diminished. Under the conditions known to exist at the project site and between the project site and MC Spring, adjacent to Soda Lake (i.e., with the Soda Mountains and intervening subsurface bedrock present), groundwater pumping effects such as those described above would be expected to (1) propagate much more slowly than if there was no intervening low-permeability bedrock, and (2) decrease in magnitude over the intervening distance from the production wells to MC Spring.

Application of the Theis equation to the Soda Mountain Valley therefore provides a very conservative estimate of drawdown in areas outside of the valley (i.e., at MC Spring). The Soda Mountain Valley is surrounded by low-permeability granitic and metavolcanic bedrock. The low-permeability bedrock focuses impacts to groundwater levels within the Soda Mountain Valley and slows the rate at which declines in groundwater levels propagate outside of the valley. By assuming the area between the Soda Mountain Valley and MC Spring to the east are part of a uniform aquifer, instead of accounting for the low-permeability mountains that may actually serve as a physical divide between the two areas, the Theis equation overestimates the potential impacts to groundwater levels at MC Spring. Even with the overestimation of impacts, a change in water level of 0.021 feet is also below the practical limits of water level measurement. Although the predicted change in water levels at MC Spring is small it is also overstated because the water level declines would be concentrated within the Soda Mountain Valley due to the presence of low-permeability bedrock at the valley margins. The potential declines in groundwater levels at MC Spring would therefore be much less than 0.021 feet and not measurable relative to natural variation.

4.1.4 Soda Mountain Valley Groundwater Storage Calculation

The groundwater storage volume of the Soda Mountain Valley was estimated by multiplying the total volume of the aquifer by the specific yield for the basin. The acreage of the alluvium in the Soda Mountain Valley is approximately 12,000 acres, the thickness of the saturated alluvium is approximately 125 feet based on the observed geology (including a portion of underlying weathered bedrock), and the specific yield of the aquifer is estimated at 0.25 to 0.3. The storage of the Soda Mountain basin is estimated to be approximately 375,000 acre-feet, using the lower (more conservative) estimate of specific yield.

12,000 acres x 125 feet x 0.25 specific yield = 375,000 acre-feet

4.1.5 Comparison of Groundwater Storage and Recharge to Project Water Use

The total water use for project construction, operation, and decommissioning is approximately 1,854 acre-feet. The total water use therefore represents approximately 0.48 percent of the water currently in storage within the basin.

Annual average project water use is also less than annual recharge to the basin, which USGS estimated at 80 to 140 AFY (Halford 2014). Recharge would therefore replenish water in the basin at a faster rate than the project would extract groundwater.

4.2 COMPARISON OF GROUNDWATER MODEL ASSUMPTIONS TO OBSERVED GEOLOGIC CONDITIONS AND HYDRAULIC PROPERTIES

The observed aquifer conditions were compared to the assumptions used in the existing groundwater models (conceptual and numerical) to evaluate the general accuracy of the models.

4.2.1 Existing Groundwater Models

SMS prepared a 3-dimensional numerical groundwater flow model in 2011 (RMT 2011), an addendum to the groundwater flow model in 2013 (TRC 2013), and a sensitivity analysis for the groundwater model in 2014 (Panorama 2014b). The model was constructed using the results of geologic mapping (WGI 2011), geotechnical borehole drilling (DYA 2010), and transient electromagnetic resistivity (TEM) soundings (TerraPhysics 2010) performed at the project site, as well as the results of well-reviewed groundwater flow model simulations from similar areas. The modeling results are summarized below.

Numerical Model

The 3-dimensional numerical model predicted that groundwater pumping during construction would cause minimal drawdown in the Soda Mountain Valley (i.e., a few feet or less) under all simulated conditions. The **maximum** simulated drawdown at the eastern edge of the valley (western edge of the South Soda Mountains) was predicted to be 2.2 feet and the **maximum** reduction in groundwater outflow from the valley via the northeast outlet was estimated at 1 percent (i.e., 4.6 AFY or less) under all modeled scenarios. The minimal drawdown at the edge of the valley would attenuate to negligible levels over the 3 miles of bedrock separating the valley from the MC Spring area at Zzyzx. Drawdown at the valley outlets within sedimentary material was predicted to be less than 1 foot, and would attenuate further to negligible measurements over the approximately 5 miles from the groundwater outlets in the valley to MC Spring at Zzyzx and the more than 6 miles to the water supply wells in the Town of Baker.

Groundwater Model Sensitivity Analysis

A sensitivity analysis was conducted to evaluate the sensitivity of modeled outcomes at MC Springs to hydraulic conductivity. The sensitivity analysis (Panorama 2014b) used a large range of hydraulic conductivity values where the high-end value (16 ft/day) was 83 times larger than the low-end value (0.17 ft/day). The sensitivity analysis indicated that there were no values in this range of hydraulic conductivity that would result in an impact to MC Spring due to the limited amount of water that is proposed for extraction from the valley relative to the estimated recharge and storage volume of the aquifer.

4.2.2 Numerical Groundwater Model Assumptions

Geology

The groundwater model included the assumption that geologic units underlying the project site consist primarily of alluvium (sedimentary deposits derived from weathering, erosion, and transport) on the flanks of the Soda Mountains and in the central Soda Mountain Valley and washes. The alluvium is dominantly present as extensive alluvial fan deposits that originate in the mountains and slope down into the valley, forming fan-shaped wedges of predominantly medium- to coarse-grained material (i.e., sand, gravel, cobbles, and boulders). Geologic mapping from Jenkins (1962) and WGI (2011) indicates that Mesozoic-age granitic rocks comprise much of the subsurface bedrock, with Jurassic-Triassic metavolcanic rocks forming significant portions and higher reaches of the Soda Mountains.

Hydrogeology

The groundwater model was calibrated to surface geophysical data collected at three locations within the Soda Mountain Valley. The three locations within the project area were investigated using TEM soundings in 2010 (TerraPhysics 2010). TerraPhysics interpreted the results of the geophysical investigation to indicate that depth to groundwater at the northern end of the project area (adjacent to the PW-1 and OW-1 work area) was approximately 182 feet bgs±13 feet (based on TEM-02 data). Bedrock was interpreted to occur at approximately 332 feet bgs at TEM-02. The existing groundwater flow model assumed that approximately 150 feet of saturated alluvium existed above bedrock at the location of TEM-02, in the northern portion of the model domain. No confining layer (i.e., clay layer) was detected in the 2010 geophysical dataset and therefore the aquifer was assumed to be unconfined. Accounting for uncertainty in the hydraulic conductivity parameter, two different parameter sets were used in two runs of the numerical groundwater model, with values ranging from 0.86 ft/day (low-end parameter set) to 3.2 ft/day (high-end parameter set) for hydraulic conductivity. A groundwater model sensitivity analysis expanded the range of hydraulic conductivity values to 0.17 ft/day (low-end parameter set) to 16 ft/day (high-end parameter set).

4.2.3 Comparison to Observed Conditions

The presence of at least 125 feet of saturated alluvium and disintegrated granite at well site PW-1 is generally consistent with the groundwater flow model, which assumed 150 feet of saturated aquifer in this area of the model domain and an average of 100 feet over the entire model domain. The saturated thickness of alluvium at well site PW-1 was estimated to be about 150 feet based on the earlier geophysical data. The geophysical data were used to develop the initial model assumptions. The expected range of variability for the stratigraphic unit thicknesses is on the order of at least 50 feet based on the earlier geophysical data. The presence of fine- to coarse-grained sands within the alluvial aquifer is consistent with the hydraulic conductivity and aquifer character assumed in the model.

Weathered bedrock (disintegrated granite, sand-sized grains) was identified in the test well borehole beginning at a depth of approximately 505 feet bgs and in the observation well borehole at a depth of approximately 510 feet bgs, and extending to the total depth of 555 feet bgs. The depth to bedrock estimated from the geophysical data for TEM-02, located adjacent to the PW-1 and OW-1 drilling site, was 332±26 feet bgs, which is about 150 feet shallower than where bedrock was encountered. The deeper bedrock is similar to the interpreted depth to bedrock at TEM-09 and TEM-11 (located further south within the project site). The different depth to bedrock at the well locations would not affect the model outcomes because the flow of groundwater depends on the hydraulic conductivity and saturated thickness of the aquifer, not the absolute elevation of the bedrock.

The observation of disintegrated granitic bedrock under the valley alluvium is consistent with the conceptual groundwater model prepared for the project and the geologic background presented above.

The presence of the clay layer was unexpected, as it is not characteristic of the valley depositional environment. The clay may have been deposited in an ancient playa lake that occupied the valley during a low-energy depositional period preceded and followed by higher-energy alluvial deposition. The lateral extent of the clay unit is not known, but given its thickness and location, it likely extends down to Soda Lake. The depth to groundwater and bedrock were also deeper than assumed in the groundwater model. Groundwater was expected to occur at approximately 182 feet bgs (approximately the top of the clay layer as observed in well bores) based on the geophysical data. Groundwater was encountered at a depth of 428 to 435 feet bgs, approximately 250 feet deeper than expected. The groundwater elevation is approximately 1,009 feet amsl at both PW-1 and OW-1. The groundwater elevations at PW-1 and OW-1 are approximately 80 to 90 feet above the elevation of groundwater along the west shore of Soda Lake. The direction of groundwater flow from the Soda Mountain Valley to Soda Lake is consistent with the conceptual model of groundwater flow that was used to construct the numerical model.

The presence of a clay layer and deeper water table aquifer and bedrock do not measurably affect the model assumptions. The groundwater model correctly assumed that the aquifer is unconfined. The aquifer is unconfined due to the presence of unsaturated sands between the water table and the clay layer.

Table 4.2-1 provides a summary of the comparison of the observed aquifer conditions to the assumptions used in the existing project groundwater models.

Table 4.2-1: Comparison of Groundwater Model Assumptions to Well Test Results

Parameter	Model Assumption	Field Data	Evaluation
Aquifer Type	Unconfined aquifer	Unconfined aquifer	Field data show model assumption is correct.
Alluvial Aquifer Sediments	Sand	Fine- to coarse-grained sand alluvium and sand-sized disintegrated granite	Field data show model assumption is correct.
Saturated Thickness of Aquifer at PW-1	150 feet at PW-1; 100 feet average across the aquifer[1]	125 feet or more	Results are within expected range of variability of 50 feet. Field data indicate saturated zone is about 17 percent thinner than what was modeled at well site PW-1 based on earlier geophysical data; aquifer thickness is within expected range of variability of 50 feet. A thinner unconfined aquifer at depth does not change the model outcomes because this is offset by the hydraulic conductivity being higher than the low end of the range that was simulated. The saturated thickness of alluvium at PW-1 was estimated to be about 150 feet based on the earlier geophysical data. The expected range of variability for the saturated thickness is on the order of at least 50 feet based on the earlier geophysical data. An average value of 100 feet of saturated alluvium was used to calculate the volume of groundwater in storage within the valley aquifer as a whole, and this location exceeds the average value of 100 feet.
Production Well Pumping Rate	40-60 gpm, assuming two or three wells pumping at comparable rates[2]	26 gpm	Sustainable pumping rate (26 gpm) was lower than the range of pumping rates used in the model simulations (40 to 60 gpm). Pumping rate might be increased by drilling deeper through fragmented granitic rocks located at base of well bore.
Drawdown in Test Well during Pumping	28 feet (three wells pumping, 3 years, high-end parameters) to 110 feet (three wells pumping, 3 years, low-end parameters)	41 feet	Observed drawdown falls within the range of values simulated. Observed drawdown in the pumped well is close to the value predicted for the 3-well, 3-year (i.e., construction period), high-end parameter set scenario. Drawdown is less than that predicted in the low-end scenario, which is to be expected, given that the sustained pumping rate (26 gpm) was less than that used in the model (40 gpm).
Hydraulic Conductivity of Aquifer	0.86 to 3.2 ft/day (numerical model) 0.17 to 16 ft/day (sensitivity analysis)	1.4 to 30 ft/day	Hydraulic conductivity range extends across high end of range of values previously modeled, indicating that the aquifer is more permeable than previously expected.

Table 4.2-1 (*Continued*): Comparison of Groundwater Model Assumptions to Well Test Results

Parameter	Model Assumption	Field Data	Evaluation
Specific Yield	0.1	0.25 to 0.3	The specific yield is 250 to 300 percent higher than that used in the model, indicating the amount of water present in the aquifer that is available for release (i.e., that can be accessed by pumping) is greater than previously estimated.
Storage	125,000 acre-feet	375,000 acre-feet	Aquifer storage is three times more than what was estimated from the model, indicating the volume of water in storage in the aquifer is greater than previously estimated.
Depth of Test Well	352 feet bgs	555 feet bgs (including 10-foot-long sump)	Test well was installed about 200 feet deeper than expected because depths to groundwater and bedrock were deeper than expected (see below). Deeper well depth does not change the model outcomes, which are governed by the thickness and permeability of saturated aquifer rather than its depth.
Depth to Groundwater	182±13 feet bgs	425 to 438 feet bgs	Actual depth to water is >200 feet deeper than modeled. Previously interpreted depth to groundwater appears to correspond to top of partially saturated clay layer in subsurface above saturated aquifer. Presence of deeper groundwater does not change the model outcomes because the saturated thickness is within 17 percent of the predicted value, and the calculated hydraulic conductivity is above the upper end of the range of modeled values (see above). The extended range of hydraulic conductivity was tested and is discussed in this report. Field data can be used to further interpret proposed production well locations in other areas of site.
Depth to Bedrock	332±26 feet bgs	505 to 510 feet bgs	Actual depth to bedrock is at least 150 feet deeper than modeled; however, this does not change the model outcomes, which are governed by the thickness and permeability of saturated aquifer rather than its depth. Field data can be used to further interpret proposed production well locations in other areas of site.
Bedrock Geology	Granitic	Granitic	Field data show model assumption is correct.

Notes:

[1] An average value of 100 feet of saturated thickness within the valley was used in groundwater modeling to estimate the volume of water in storage within the entire valley aquifer.

[2] To provide 192 AFY, this equates to 192 acre-feet/year * 325,851 gallons/acre-foot * 1 year/365 days * 1 day/1,440 minutes = 120 gpm. Three wells providing a total of 120 gpm would need to be pumped at an average of 40 gpm each.

4.2.4 Model Recalibration

The Theis (1935) method has been used to recalculate drawdown at MC Spring at Zzyzx to evaluate potential impacts on Mohave tui chub at MC Spring. Results are summarized in Section 4.1.3 and are presented in detail in Appendix M.

Numerical model recalibration will be conducted prior to implementation of the Groundwater Monitoring and Mitigation Plan (GMMP), using updated model parameters calculated using the well test results that are presented in this report. SMS will conduct additional analysis of the items listed in Table 4.2-2 when the model is recalibrated/re-run.

Table 4.2-2: Model Recalibration Parameters

Parameter	Summary	Likely Outcome
Depth to water and depth to bedrock	The current groundwater model is calibrated to the depth to groundwater and depth to bedrock at three locations in the valley based on the 2010 geophysical data. The geologic logs for the test well and observation well drilled at well site PW-1 (near location TEM-02) and the monitoring well to be drilled at MW-1 would be used to calibrate and evaluate the existing geophysical interpretations at the two other locations and potentially to recalibrate the model at these other locations as well.	The numerical model would be revised prior to implementation of the GMMP so that the observed drawdown values at each well during groundwater pumping can be compared with the predicted drawdown values of the recalibrated model to evaluate whether an action criterion is triggered.
Model-predicted radius of influence and decline in outflow from the valley	Radius of influence and outflow decline would be recalculated using the revised model results.	The numerical model would be revised prior to implementation of the GMMP so that the observed radius of influence during groundwater pumping (i.e., potential for effects outside the basin) and outflow decline can be compared with predicted values of the recalibrated model to evaluate whether an action criterion is triggered.

4.3 WATER QUALITY ANALYSIS

Groundwater sample analytical data are summarized in Tables 3.4-1, 3.4-2a, 3.4-2b, and 3.4-2c.

4.3.1 Connectivity of Valley Groundwater to MC Spring

General Chemistry

Water quality data for PW-1 and OW-1 are presented in Table 4.3-1, along with water quality data for samples collected from MC Spring at the DSC.

Table 4.3-1: Comparison of Project Site and MC Spring Water Quality Data: General Chemistry

Sample Location	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
Project Site			
PW-1 (72-hour constant-rate well test sample)	1,250	239	429
OW-1 (development sample)	1,140	292	369
DSC			
MC Spring[1]	2,033	676	308

Note:
[1] MC Spring data from Vargas (2012).
mg/L = milligrams per liter

Water at MC Spring at the DSC has over twice as much chloride (676 mg/L vs. 239 mg/L in PW-1 and 292 mg/L in OW-1), and nearly twice as much TDS (2,033 mg/L vs. 1,250 mg/L in PW-1 1,140 mg/L in OW-1) compared to the groundwater at well site PW-1. Also, the anion content of water at MC Spring is dominated by chloride, whereas at PW-1 it is dominated by sulfate. The water at MC Spring has the character of an older, more regional groundwater system, where chloride typically becomes the dominant anion (Freeze and Cherry 1979). The Soda Mountain Valley aquifer groundwater has the character of a younger, more localized groundwater system, where sulfate has not yet been superseded by chloride as the dominant anion.

Isotopes

Isotope data for PW-1 are presented in Table 4.3-2, along with isotope data for samples collected from MC Spring and wells at the DSC. Results are presented for stable isotopes (oxygen-18, deuterium, sulfur-34, and carbon-13) and radioactive isotopes (tritium and carbon-14).

Groundwater collected from PW-1 contained -11.18‰ oxygen-18 ($\delta^{18}O$), -88.5‰ deuterium ($\delta^{2}H$), and 6.3‰ sulfur-34 ($\delta^{34}S$), all of which are “heavy” isotopes (i.e., have higher atomic weights than more common forms of these elements). These values are significantly lower than the values detected in samples collected at MC Spring (-8.9‰, -68‰, and 10‰, respectively). These lower values indicate groundwater at the project site is substantially more depleted with respect to these three stable isotopes compared to MC Spring (i.e., concentrations at the project site are lower than at MC Spring). This result is consistent with the location of the project site at a higher elevation than MC Spring. Higher elevations and cooler temperatures (which typically correlate to higher elevations) can result in groundwater that is depleted with respect to heavier isotopes such as oxygen-18, deuterium, and sulfur-34. If the groundwater from Soda Mountain Valley was a major contributor to the water supply at MC Spring, it would be expected that the water at MC Spring would resemble the isotope composition of PW-1 much more closely.

Table 4.3-2: Comparison of Project Site and MC Spring Water Quality Data: Isotopes						
Sample Location	**Analyte (‰ unless noted)**					
	$\delta^{18}O$ (oxygen-18)	**$\delta^{2}H$ (deuterium)**	**$\delta^{34}S$ (sulfur-34)**	**$\delta^{14}C$ (carbon-14) (pmc, %)**	**$\delta^{13}C$ (carbon-13)**	**$\delta^{3}H$ (tritium) (TU)**
Project Site						
PW-1	-11.18	-88.5	6.3	8.093	7.0 (DIC) -22.3 (DOC)	<0.8
DSC						
MC Spring	-8.9	-68	10	43.1 +/- 0.3	-7.2	<0.5
Production Well	-9	-70	9.7	48.1 +/- 0.3	-5.5	<0.9
Well A Spring	-8.8	-68	7.7	89.2 +/- 0.4	-10.1	<1.1 Apparent 0.4
Well A3	-9.1	-69	9.1	81.0 +/- 0.4	-12.1	<0.8
Well A12	-9	-68	8.6	-	-	-
Well JW3	-9.1	-70	9.8	68.8 +/- 0.3	-10.1	<0.8
Well A6	-8.9	-68	7.9	75.5 +/- 0.4	-10.6	<0.4
Well JW2	-8.9	-68	11	-	-	-
Well A15	-9	-68	8.8	-	-	-
Well A5	-8.7	-68	0.2	-	-	-
Well A10	-8.2	-66	5.6	77.8 +/- 0.4	-8.9	<0.8 Apparent 0.3
Well JW1	-8.4	-68	-9.9	-	-	-
Well A4	-7.3	-64	4.3	-	-	-
Well A2	-7.1	-63	8.9	-	-	-

Note:

[1] DSC data from Vargas (2012).

‰ = per-mil

DIC = inorganic carbon

DOC = organic carbon

pmc = percent modern carbon

TU = tritium units

The dissolved inorganic carbon (DIC) in the PW-1 groundwater contained 7.0‰ carbon-13 ($\delta^{13}C$), substantially higher than the -7.2‰ carbon-13 in DIC at MC Spring. Carbon-13 is also a "heavy" stable isotope (the more common form of carbon is carbon-12). Abundant carbonate cement is present in the shallow soils at well site PW-1, as observed during test well drilling (see Appendix C). Dissolution of carbonate cement in shallow soils during recharge (i.e., infiltration of stormwater runoff) could contribute a substantial amount of isotopically heavier carbon to the infiltrating water, yielding the enriched carbon-13 values at PW-1. It is unknown whether the soils at MC Spring have the same amount of carbonate cement as is found in Soda Mountain Valley. The negative carbon-13 values from MC Spring suggest that there may not have be as much carbonate cement present there, but the exact reason for the difference in carbon-13 values is not known.

Analytical results for the radioactive isotope of carbon (carbon-14) were somewhat ambiguous with respect to age of water at the PW-1 site and at the MC Spring site. Percent modern carbon (pmc) in carbon-14 analyses is a measure of the age of groundwater. PW-1 groundwater contained 8.093% modern carbon, compared to 43.1% modern carbon at MC Spring at the DSC. This might suggest that groundwater at the project site is significantly older than the water at MC Spring (contains less modern carbon); however, the enriched carbon-13 in PW-1 suggests that dissolution of radioactively "dead" carbon from the ancient carbonate cement has occurred, which would bias the results and yield what appears to be an older age for the groundwater at PW-1. Therefore the apparent older age of groundwater at PW-1 based on carbon-14 data at PW-1 may be misleading, influenced by dissolution of ancient carbonate cement that is radioactively "dead." A similar conclusion, that dissolution of "dead" carbonate cement was biasing the results at the MC Spring area, was reached by Vargas (2012). Thus, the carbon-14 data appear to be biased by dissolution of "dead" carbon, and unlike the stable isotope data, do not present a reliable source of information to differentiate between the water at Soda Mountain Valley (PW-1) and MC Spring.

The radioactive isotope of hydrogen (E^3H, or tritium) was non-detectable at PW-1 and at MC Spring, indicating that the water at both locations is generally older than about 64 years (pre-1950) in age. Unlike the stable isotopes of carbon, hydrogen, and sulfur, the tritium results do not yield information that is useful to differentiate between the two water sources.

The stable isotope signature of groundwater from well site PW-1 differs substantially from that of MC Spring water and groundwater samples collected east of the Soda Mountains at the DSC. The MC Spring water and deeper groundwater at the DSC had stable isotopic profiles similar enough to suggest they share a common source of water (Vargas 2012). In contrast, the stable isotope profile of PW-1 groundwater is substantially different from that of MC Spring water and the surrounding groundwater. The isotope data indicate that the Soda Mountain Valley groundwater at PW-1 is not closely connected hydraulically to the DSC groundwater or to MC Spring.

Connectivity of Soda Mountain Valley Aquifer with MC Spring

The differences in chemical composition between MC Spring and adjacent wells at the DSC and the Soda Mountain Valley aquifer indicate that they likely are not closely connected and are part of separate and distinct groundwater systems.

4.3.2 Boundary Conditions and Aquifer Heterogeneity

The lateral extent of an aquifer is limited by the presence of one or more physical boundaries. Physical and chemical data from the well test were analyzed to evaluate the potential presence of boundary conditions in the aquifer. Physical boundary conditions, such as an impermeable boundary (a boundary through which groundwater does not appear to flow, such as across a fault or a change in lithology to a low-permeability unit) or a recharge boundary (when a surface water body is hydraulically connected to an aquifer), can result in changes in the rate of drawdown over time during the well test. These changes are generally sharp, resulting in a change in the slope of drawdown plotted versus time during the test.

No indication of a physical boundary was evident in analysis of the drawdown versus time data from the well test.

Boundary conditions can also result in changes in chemistry during a well test if, for example, leakage from a different aquifer occurs. Analytical results for the three constant-rate water quality samples were compared to evaluate the presence of boundary conditions and aquifer heterogeneity. As shown in Table 3.4-1, most water quality parameters are very similar among the three samples collected at 24, 48, and 72 hours after initiation of pumping. Three field-measured parameters are not consistent among the three samples and indicate a decreasing trend:

- DO, which decreased from 0.90 mg/L to 0.05 mg/L
- ORP, which decreased from -1.8 mV to -71.5 mV
- turbidity, which decreased from 5.04 NTU to 1.28 NTU

The decrease in DO is likely indicative of the pump progressively pulling in water from further away from the well during the test. Water from further away would be unaffected by turbulence and potential aeration caused by drilling operations compared to the water in the immediate vicinity of the well bore and therefore would contain less DO. The decrease in ORP is related to the decrease in DO with ORP becoming more negative (more reducing) over time with a decreased concentration of DO. The decrease in turbidity is to be expected because the small amount of fine sediment that would have remained in the formation and water column after development of PW-1 would be removed over the course of the constant-rate test, which would result in a decrease in turbidity as pumping continued.

These chemical trends are not indicative of major heterogeneities in the aquifer and are not representative of boundary conditions. In summary, neither the physical nor the chemical data indicate that there are significant heterogeneities or aquifer boundaries in the vicinity of PW-1.

5 CONCLUSIONS

5.1 ADEQUATE GROUNDWATER CAPACITY

5.1.1 Water Needs

The project is estimated to require approximately 192 AFY during the 24- to 30-month construction period and the 2-year decommissioning period, as well as approximately 33 AFY during the 30-year operational period. The maximum volume of groundwater extraction of 192 AFY equates to an approximate combined pumping rate of 120 gpm, assuming that the water supply wells are pumping 24 hours/day, 365 days/year.

5.1.2 Number of Production Wells

Model simulations indicated that the aquifer within the Soda Mountain Valley would be adequate to supply water for project construction, operation and maintenance, and decommissioning. The pumping rate (26 gpm) sustained during the constant-rate well test was slightly lower than the pumping rates used in the model simulations (40 gpm from each well for a three-well scenario). In AFY, a pumping rate of 26 gpm equates to:

$$26 \text{ gpm} \times 1 \text{ ft}^3/7.48 \text{ gal} \times 1{,}440 \text{ min/day} \times 365 \text{ day/yr} \times 1 \text{ acre}/43{,}560 \text{ ft}^2 = 42 \text{ AFY}$$

If similar well yields of 26 gpm were obtained for other proposed project production wells, four or five wells would be required to supply water for the project for up to 30 months during construction (and up to 2 years during decommissioning). A single well producing 26 gpm would be sufficient to supply the operational water needs during the 30-year life of the project. All project production wells would be inspected and maintained throughout the life of the project to ensure they are available for use during the decommissioning phase, and also would be available as back-up wells when the primary well used for operational water supply is out of service for maintenance or repair.

Several factors influence the total number of wells required for the project. These include:

- The productivity of future project wells: the rate could be higher or lower if a thicker or thinner saturated interval is encountered, or if the permeability is higher or lower
- The amount of grading and compaction required in the final design
- The pace of construction (number of megawatts per project phase) and extent of the active construction area
- Use of palliatives to stabilize soils in lieu of water application

All production wells would be installed within the area of permanent project impacts defined in the EIS/EIR. Use of more than three production wells would not have additional environmental impacts because the well area would otherwise be disturbed by the project and the total project water demand would not increase. The use of additional wells to supply water for the project would potentially result in a more diffuse drawdown across the Soda Mountain valley where impacts to groundwater levels would be slightly less concentrated at each well location (i.e., less drawdown at any one well location). The potential for impacts outside of the valley would be the same with use of more than three wells because the total water demand would be the same as previously proposed.

5.1.3 Groundwater Availability

Based on observed field conditions, the total volume of water in storage within the basin was estimated to be 375,000 acre-feet, using the lower (more conservative) calculated value of specific yield of 0.25 and an average aquifer thickness of 125 feet. The total estimated project groundwater use for construction, operation, and decommissioning is about 1,854 acre-feet, as shown in Table 5.1-1. Total water use over the course of project construction, operation, and decommissioning would therefore be approximately 0.48 percent of the water in storage, which is a minimal amount. Moreover, water would continue to be recharged to the aquifer over time through precipitation infiltration. USGS estimated recharge at 80 to 140 AFY (Halford 2014). Estimated recharge is greater than the average annual water use of 53.7 AFY over the life of the project. Groundwater would therefore be replenished by recharge at a faster rate than the project would extract groundwater on average. The well test results indicate that the Soda Mountain Valley aquifer has an adequate supply of groundwater for project use with selection of the optimal well spacing, placement, and construction details.

Table 5.1-1: Project Water Use Compared to Water in Storage

Phase	Annual Water Use (AFY)	Time Period	Total Water Use (acre-feet)	Percentage of Water in Storage
Construction	192	30 months (max)	480	0.13
Operation	33	30 years	990	0.25
Decommissioning	192	2 years	384	0.10
		Total	***1,854***	***0.48***

5.2 IMPACTS ON SENSITIVE RECEPTORS

5.2.1 Mohave Tui Chub

The use of groundwater for the project would have no effect on the Mohave tui chub because:

1. The distance of 4.5 to 5.5 miles between project groundwater extraction wells and MC Spring.
2. The presence of 1.8 to 4 miles of low-permeability bedrock of the Soda Mountains between the Soda Mountain Valley and MC Spring.

3. The Soda Mountain aquifer is chemically distinct from the MC Spring aquifer indicating the resources are part of separate and distinct groundwater systems.
4. An average of 53.7 acre-feet would be used by the project each year relative to the USGS estimate of recharge to the valley of 80 to 140 AFY (Halford 2014).
5. The total project water use (combined construction, operation, and decommissioning) of 1,854 acre-feet represents less than 0.5 percent of the estimated 375,000 acre-feet of water in storage in the Soda Mountain Valley.
6. Even if the intervening low-permeability mountains did not exist, drawdown would be less than 0.0000068 feet at MC Spring after 3 years of construction and 0.021 feet after an additional 30 years of operational water use.
7. Water levels at MC Spring currently fluctuate seasonally between 0.8 and 1.6 feet per year with no effect to the Mohave tui chub.
8. The modeled (sensitivity analysis) drawdown of 0.021 feet (1/4 inch) with no intervening mountains would be so small as to be difficult to reliably detect, given the current natural fluctuations and limitations in accuracy of groundwater level measurement.
9. When project pumping stops, groundwater levels will recover as demonstrated in the pumping test.
10. The project GMMP specifies installation of monitoring wells at key locations in the Soda Mountain Valley and identifies groundwater levels in the wells that would trigger corrective measures to avoid effects to MC Spring and the Mohave tui chub. Corrective measures include reducing or stopping pumping.
11. Boring data indicate that bedrock beneath the alluvium is composed of granitic material, not carbonate, which is a source of water at MC Spring.

5.2.2 Baker Wells

The Baker water supply wells are located more than 6 miles from the nearest proposed production well at the project site (PW-1; Figure 1.1-2). The results of the Theis equation, using the calculated values of specific yield and transmissivity presented in Section 4.1, conservatively predict drawdown of less than 0.021 feet at MC Spring, which is closer to the project than Baker. Predicted drawdown at Baker would be even less due to the increased distance between the project and the Town wells. Drawdown is calculated as a function of distance from the well. The groundwater model would therefore predict less drawdown in Baker, at 6 miles from the project wells, than at MC Spring, which is 4.5 miles from the nearest project well. Drawdown of less than 0.021 feet would be far below the seasonal variability of water levels. Water levels on the Soda Lake playa fluctuate by approximately 4.9 feet (1.5 meters) seasonally (Barthel 2008). Change in groundwater levels of 0.021 feet would be below the practical limits of measurement due to the large amount of seasonal variation.

5.2.3 Rasor Road Groundwater Well

The Rasor Road groundwater well is located 1.5 miles from the nearest proposed production well at the project site (PW-3; Figure 1.1-2). The Rasor Road well was completed hundreds of feet into bedrock on a ridge that is hydraulically isolated from the alluvial aquifer in the Soda

Mountain Valley. The Rasor Road well is not screened in the same alluvial unit that the project production wells would be screened in; therefore, the water sources for the Rasor Road well and the project production wells would not be the same (i.e., bedrock vs. alluvium). It is therefore unlikely that project-related groundwater extraction would have any impact on use of the Rasor Road groundwater well because the water source for the Rasor Road well is likely separate and distinct from that of the alluvial aquifer in the Soda Mountain Valley, and the drawdown at the Rasor Road location would be negligible even if the two areas were connected hydraulically.

5.3 WATER QUALITY

The general chemistry and isotopic signatures of groundwater from well site PW-1 differ substantially from that of MC Spring water and groundwater samples collected east of the Soda Mountains at the DSC. The MC Spring water and deeper groundwater at the DSC had general chemistry profiles (represented by concentrations of TDS, chloride, and sulfate, among other constituents as reported in Vargas 2012) and isotopic profiles similar enough to suggest they share a common source of water (Vargas 2012). In contrast, the water quality profile of PW-1 groundwater is substantially different from that of MC Spring water and the surrounding groundwater. The water quality data indicate that the Soda Mountain Valley groundwater at well site PW-1 is not closely connected hydraulically to DSC groundwater or to MC Spring.

Additional TDS data will be collected during installation of future groundwater supply wells at the project site. An evaluation of the TDS data will be conducted during future project development to further assess the need for water treatment using reverse osmosis.

5.4 GROUNDWATER MODEL VALIDITY

The analytical model used for sensitivity analysis has been updated with new data from the well test. The model supports the validity of the previous conclusion that there would be no impacts from the project on water levels at the nearest receptors: MC Spring at Zzyzx, the Rasor Road groundwater well, or Town of Baker water supply wells.

5.5 MODEL CONSISTENCY WITH FIELD OBSERVATIONS AND RECALIBRATION OF GROUNDWATER MODEL

The results from well drilling, construction, and testing are consistent with the following assumptions used in the groundwater flow model:

- Unconfined aquifer
- Fine- to coarse-grained sand alluvial aquifer
- Saturated thickness of 125 feet (within 17 percent of model assumption)
- Pumped well drawdown between 28 and 110 feet
- Granitic bedrock under the aquifer
- Direction of groundwater flow from Soda Mountain Valley toward Soda Lake

The results indicate that the aquifer is deeper, slightly thinner, and more permeable than previously expected. The change in groundwater depth, aquifer thickness, and permeability do not substantially affect the model outcomes related to water availability and impacts to Mohave tui chub.

The analytical model generated using the Theis method provides a conservative estimate of potential groundwater drawdown outside of the valley and can be used to conservatively analyze potential impacts under NEPA and the California Environmental Quality Act (CEQA). The hydrologic analysis presented in the Draft EIS/EIR (BLM and County 2013) is generally consistent with the observed aquifer properties and correctly characterizes the existing groundwater system.

The numerical groundwater flow model should be recalibrated prior to project development and implementation of the GMMP. Recalibration of the model at this time will not assist BLM or the County in defining impacts to MC Spring because impacts were conservatively estimated using an analytical model, which demonstrates that there is no impact to Mohave tui chub. The potential drawdown impact calculated using the numerical model would be even less at MC Spring because the numerical model accounts for the reduced permeability of the Soda Mountains.

6 RECOMMENDATIONS

The numerical groundwater model should be recalibrated using the well test data prior to implementation of the GMMP. The GMMP includes action criteria that are tied to model predictions of groundwater decline at the proposed monitoring wells. The numerical model needs to be recalibrated to make accurate assessments of the measured decline in groundwater levels at the monitoring wells relative to the modeled declines.

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Appendix A: Well Construction Methods

WELL CONSTRUCTION METHODS

DEVIATIONS FROM TEST PLAN

The field program was generally completed in accordance with the methodology described in the Test Plan. However, the following deviations occurred due to observed field conditions and external factors:

- **Installation Sequence**: The original sequence of events, as presented in the Test Plan, was to drill the observation well first using air rotary casing hammer (ARCH) technology to the water table, and then to use mud rotary below the water table to drill to total depth. The test well was to be drilled after observation well drilling was completed. Issues related to projected delays in well screen manufacturing necessitated that the test well pilot hole be drilled first to allow sufficient time for the screen manufacture.
- **Drilling Depth**: The anticipated drilling depth was approximately 352 feet below ground surface (bgs) based on existing subsurface data for the well site area. The total drilling depth for both wells was approximately 550 feet bgs based on observed subsurface geology (i.e., deeper bedrock). The Test Plan specified that drilling would continue into bedrock for about 20 feet. Because the bedrock appeared to be permeable and was readily drilled, drilling continued into bedrock for about 35 to 45 feet, at which point the borings were terminated, per discussions with BLM.
- **Construction Details**: As discussed in the Test Plan, the specific well construction details were estimated based on existing subsurface data for the well site area. It was anticipated that a 100- to 150-foot-long screen would be installed in each well. A shorter screen was installed in each well (70 feet long) based on the observed subsurface geology (i.e., thinner saturated zone).
- **Background Water Level Data Collection**: The Test Plan specified 3 days of background data collection prior to initiating the aquifer testing program. Only 1 day of background data collection was performed because the water levels in the wells were deemed to be equilibrated after only 1 day of recovery after completion of well development activities.
- **Step-drawdown Test**: The Test Plan specified four steps to be used in the step-drawdown test. Three steps were used due to the lower than expected rate of sustainable pumping.
- **Pumping Rates**: The Test Plan anticipated that the four steps used in the step-drawdown test would be approximately 50, 100, 150, and 200 gallons per minute (gpm); however, much lower rates were sustainable based on well performance (9,

16, and 26 gpm). The rate selected for the constant-rate aquifer test was also lower as a result (26 gpm).

- **Groundwater Sample Collection**: A groundwater sample was collected from well OW-1 after 4 hours of pumping during OW-1 development and was analyzed for select chemical constituents. This sample was deemed equivalent to, and was collected in place of the 3- to 5-hour sample that was to be collected during the constant-rate aquifer test, as specified in the Test Plan. An additional sample was collected during the final step of the step-drawdown test at PW-1 and was analyzed for select chemical constituents.

SITE ACCESS

The preferred well site was accessed via a BLM-designated West Mojave Plan open route (i.e., CL8847).

PRE-FIELD PREPARATION

Burns & McDonnell (BMcD), under contract to Panorama, directed and performed the field activities at the project site. The following pre-field activities were performed prior to initiation of subsurface work:

- BLM approved the Test Plan on July 30, 2014.
- A work plan for biological surveys was prepared and submitted to BLM and the U.S. Fish and Wildlife Service (USFWS) for approval. The work plan was approved on July 7, 2014.
- A site-specific Health and Safety Plan was prepared for use in the field. The plan included information on the roles and responsibilities of project personnel, hazard identification and analysis, required personal protective equipment, site access and control, standard operating procedures, and an Emergency Action Plan.
- An Environmental Training Program (ETP) was prepared by Panorama and provided to BMcD to use to educate on-site personnel on the environmental protection measures for biological, cultural, paleontological, hydrologic, and recreational resources, as well as utilities and hazards. All on-site personnel signed an acknowledgement form stating that they had received and understood the training and would abide by the required environmental protection measures.
- BLM approved a Categorical Exclusion under the National Environmental Policy Act (NEPA), along with a Temporary Use Permit (TUP).
- BMcD applied for and obtained drilling and well installation permits (ministerial permits) for both wells from the County of San Bernardino Division of Environmental Health Services. Copies of permits are included in Appendix B.
- A discharge permit was not required by the Lahontan Regional Water Quality Control Board (LRWQCB) under State Water Resources Control Board Order No. 2003-0003-DWQ – *General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality* because the discharge was planned to be adequately distributed using sewer leach field piping and there has been limited activity in the valley; therefore, the groundwater

was not suspected to be contaminated (Cass 2014a). Panorama prepared and submitted a discharge plan, including a map showing the test well location and a diagram showing the piping network and the anticipated discharge distribution, to LRWQCB prior to initiation of the aquifer testing program. LRWQCB approved the discharge plan on August 20, 2014 (Cass 2014b).

- A permit from the U.S. Army Corps of Engineers was not required because the area does not drain to waters of the U.S. (refer to Appendix B of Test Plan).
- Drilling locations and the area of maximum disturbance were identified and marked with white paint and flagging tape in conjunction with BLM.
- Underground Service Alert (USA), a regional subsurface utility notification service, was contacted on July 30 (initial call) and August 6 (to update start date) to notify local utility companies of the upcoming subsurface work. The USA ticket was renewed on September 2, 2014.
- C Below, Inc., a private utility locator, performed a subsurface utility survey to screen the drilling locations for underground utilities on July 25, 2014. No subsurface utilities were identified within or near the work area.
- Peter Woodman of Kiva Biological, a BLM-approved biologist trained and certified to handle desert tortoise, performed a preconstruction biological field survey of the approved work area on August 11 and 12, 2014. No desert tortoise or other special-status species were observed during the preconstruction survey.
- Mr. Woodman supervised installation of desert tortoise exclusion fencing by Our Valley Fence around the approved drilling work area, as presented in the Test Plan, on August 12. Amanda Scheib, a BLM-approved biologist also trained and certified to monitor desert tortoise, supervised installation of the approved leach field discharge area on October 4, 2014.
- A soil bin, a water tank, and water to support the drilling activities were delivered to the site the week of August 11. Additional soil bins and water were delivered to the site during the course of drilling and well installation, as needed, to support activities. Water Pros and Pearson Water delivered water at various times as needed. United Pumping Service, Inc. (UPSI), and North State Environmental delivered empty soil bins and removed full bins during the drilling and well construction activities. Waste manifests that document the transport and disposal of investigation-derived waste (drill cuttings and development water) will be provided in an addendum to this report.
- National Exploration, Wells, and Pumps (NEWP), the drilling contractor, performed minor grading of the work area on August 18, 2014, to reduce slip, trip, and fall hazards. The grading was verbally authorized by BLM by direct communication with BMcD.

FIELD PROGRAM

Drilling

Test Well

NEWP, a C-57-licensed drilling company, mobilized to the site on August 18, 2014, to the test well location (PW-1). The original sequence of events, as presented in the Test Plan, was to drill the observation well first using ARCH technology to the water table, and then to use mud rotary below the water table to drill to total depth. The test well was to be drilled after observation well drilling was completed. Issues related to projected delays in well screen manufacturing necessitated that the test well pilot hole be drilled first to allow sufficient time for the screen manufacture.

A temporary 12-inch-diameter conductor casing was installed at the test well location to a depth of approximately 20 feet below ground surface (bgs) on August 18, 2014. The test well pilot borehole was drilled to a total depth of approximately 545 feet bgs between August 19 and 27, 2014, using direct mud rotary technology. Mud rotary methods allow for the borehole to remain open in the presence of saturated sands and gravels. All drilling fluids, including mud, were stored in a portable mud tank placed adjacent to the drill rig and were transferred into soil bins for temporary storage, prior to removal from the site. Following attainment of total depth, the drill stem was removed.

Throughout drilling, BMcD examined soil cuttings, classified the soil, and collected samples for a chip tray and for submittal to a geotechnical laboratory for grain size analysis to aid in well design. BMcD recorded soil observations on boring logs in general accordance with ASTM International (ASTM) Standard D2488-09: *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)* using the Unified Soil Classification System for guidance. BMcD also noted observations during drilling, such as drill chatter and variations in cuttings return, to provide additional information on subsurface geology. Samples were labeled with the boring number and the depth interval over which they were collected. At the completion of drilling, select soil samples from the targeted screen zone were submitted to Roscoe Moss, the well screen manufacturer, for grain size analysis to aid in well design. The PW-1 well log is provided in Appendix C.

Pacific Surveys conducted a downhole geophysical survey and generated the following geophysical logs of the test well pilot hole on August 28, 2014:

- Gamma ray
- Spontaneous potential
- Resistivity (short-normal and long-normal)
- Sonic, variable density
- Caliper

Geophysical logs are provided in Appendix D.

Observation Well

NEWP mobilized to the observation well location (OW-1) on August 28, 2014. The observation well borehole was drilled using ARCH technology to a depth of approximately 180 feet bgs, near the depth of the top of a thick clay layer observed in the PW-1 pilot hole. NEWP switched to mud rotary drilling technology once the clay layer was encountered, on September 2, 2014, to complete the boring to a total depth of approximately 555 feet bgs. Total depth was reached on September 6, 2014. Following attainment of total depth, the drill stem was removed.

Throughout drilling, as for PW-1, BMcD examined soil cuttings, classified the soil, and collected samples for a chip tray and for submittal to a geotechnical laboratory for grain size analysis to aid in well design. BMcD recorded soil observations on boring logs as described above. BMcD also noted observations during drilling, such as drill chatter and variations in cuttings return, to provide additional information on subsurface geology. The OW-1 well log is provided in Appendix C.

Pacific Surveys conducted a downhole geophysical survey and generated the following geophysical logs of the observation well borehole on September 6, 2014:

- Gamma ray
- Spontaneous potential
- Resistivity (short-normal and long-normal)
- Sonic, variable density
- Caliper

Geophysical logs are provided in Appendix D.

Well Design

The soil samples submitted to Roscoe Moss were analyzed using ASTM Standard D6913-04 (2009), *Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*. Geotechnical testing results are provided in Appendix E. Well construction materials and screen intervals were chosen based on water table depth, geophysical logs, the soil logs generated during drilling of the pilot holes, and geotechnical testing results (i.e., sieve testing of aquifer soils).

Test Well

The results of the sieve analyses, the geologic log, the geophysical logs, observations recorded during drilling, and driller input were used to design the test well. Based on these results, and as recommended by the well screen manufacturer (Roscoe Moss), the test well was selected to have 0.070-inch slot, Ful Flo, low-carbon, louvered screen. The well screen was selected to be 70 feet long and to be installed between approximately 545 and 475 feet bgs. The top of the well screen was designed to be installed approximately 50 feet below the water table. Screen placement was based on the objective of keeping the entire well screen submerged to avoid encrustation issues and cavitation issues that can be associated with a water table located below the top of the well screen. The screen depth selected was based on balancing a desire for maximum well inflow length (maximum screen length) with a need to avoid drawing the water table down into the well screen during pump operation: the shorter the well screen, the larger the amount of drawdown that is available before the water table is drawn down into the well screen interval. Some flow of groundwater from above the top of screen will occur through the sand pack, which can be advantageous. The filter pack selected was a 6x12 gravel pack blend. Well construction details for PW-1 are provided in Appendix C.

Observation Well

The results of the sieve analyses, the geologic log, the geophysical logs, observations recorded during drilling, and driller input were used to design the observation well. Based on these results, the observation well was selected to have 0.020-inch, factory-slotted, Schedule 80 polyvinyl chloride (PVC) screen from 555 to 475 feet bgs. The filter pack selected was Lapis Lustre kiln-dried #30 sand. Well construction details for OW-1 are provided in Appendix C.

Well Construction

Test Well

NEWP removed the temporary conductor casing on September 10, 2014. NEPW drilled a 26-inch-diameter borehole to a depth of approximately 30 feet bgs and installed 22-inch-diameter conductor casing to a depth of approximately 30 feet bgs on September 11, 2014. NEWP sealed the conductor casing in place with a 10-sack sand-cement slurry. NEWP reamed the test well pilot hole to a diameter of 20 inches and a depth of 555 feet bgs on September 16 through 24, 2014. NEWP constructed the test well on September 24 through 29, 2014. The borehole was thinned of drill mud prior to casing installation. NEWP installed a 10-foot-long sump with a 10.75-inch-diameter low-carbon steel cap in the bottom 10 feet of the borehole (545 to 555 feet bgs). NEWP then installed 10.75-inch-diameter, 0.070-inch slot, Full Flo, low-carbon, louvered screen from 545 to 475 feet bgs. NEWP installed blank low-carbon steel riser from 475 feet bgs to approximately 3.0 feet above ground surface. The driller installed filter pack (6x12 gravel pack blend) in the annular space from total depth (555 feet bgs) to 470 feet bgs (i.e., about 5 feet above the top of the screen). NEWP used the drill rig winch to surge the filter pack with a surge block after placement for about 1 ¾ hours; additional filter pack material was installed after surging to bring the top back to the desired depth. NEWP then placed 3 feet of Lapis Lustre #30 sand (medium sand) from 470 to 467 feet bgs, and 9 feet of Lapis Lustre #60 sand (fine sand) from 467 to 458 feet bgs, as a transition zone, to inhibit any invasion of grout into the screen zone, and surged the transition seal for about 20 minutes. Residual drilling mud was displaced with filter pack and water (via a tremie pipe) during annular material installation. A 3.25-inch-outside-diameter (OD) black steel fill tube (to replace filter pack material as needed for well maintenance) and a 2-inch-diameter black steel sounding tube for water measurements (installed approximately in the 500- to 520-foot-bgs interval) were installed adjacent to the well casing after casing installation and prior to filter pack placement.

NEWP installed a sanitary seal consisting of neat cement grout from the top of the transition seal in three lifts of variable lengths; each lift was allowed time to cure prior to placement of the subsequent lift. NEWP placed the final lift of sanitary seal on September 29. Well construction details are summarized in Table A-1 and are shown in graphic form in Appendix C.

Table A-1: Well Dimensions and Construction Materials		
Parameter	Dimension or Material	
	Test Well (PW-1)	Observation Well (OW-1)
Borehole		
Pilot borehole diameter (inches)	12	10
Pilot borehole depth (feet bgs)	545	555
Reamed borehole diameter (inches)	20	N/A
Reamed borehole depth (approximate feet bgs)	555	N/A
Conductor Casing		
Conductor casing borehole diameter (inches)	26	N/A
Conductor casing diameter (inches)	22	N/A
Conductor casing borehole depth (feet bgs)	30	N/A
Conductor casing depth (feet bgs)	30	N/A
Conductor casing type	0.375-inch wall, mild steel	N/A
Conductor casing sealing material	10-sack sand-cement slurry	N/A
Well Casing		
Well casing depth (feet bgs)	545 (555 including 10-foot-long sump)	545 (550 including 5-foot-long sump)
Well casing diameter (inches)	10.75 OD	4
Screen interval (feet bgs)	475 to 545	475 to 545
Well casing type	Low-carbon black steel	Sch. 80 polyvinyl chloride (PVC)
Well screen type	Low-carbon steel, Full Flo, louvered, 0.070-inch slot size	Sch. 80 PVC, factory-slotted 0.020-inch slot size
Annular Materials		
Sanitary seal interval (feet bgs)	0 to 463	0 to 463
Sanitary seal type	Neat cement grout	Neat cement grout
Transition seal interval (feet bgs)	458 to 470	463 to 473
Transition seal type	Lapis Lustre #30 sand (467 to 470) Lapis Lustre #60 sand (458 to 467)	Lapis Lustre #60 sand
Filter pack interval (feet bgs)	470 to 555	473 to 550
Filter pack type	6x12 gravel pack blend	Lapis Lustre kiln-dried #3 sand

Observation Well

NEWP constructed the observation well on September 7 through 11, 2014. The borehole was thinned of drill mud prior to casing installation. NEWP installed a 5-foot-long sump with a 4-inch-diameter Schedule 80 PVC cap in the bottom 5 feet of the borehole (545 to 550 feet bgs). NEWP then installed 4-inch-diameter, 0.020-inch, factory-slotted, Schedule 80 PVC screen from 545 to 475 feet bgs. NEWP installed blank Schedule 80 PVC riser from 475 feet bgs to approximately 2.4 feet above ground surface. The driller installed filter pack (Lapis Lustre kiln-dried #3 sand) in the annular space from total depth (550 feet bgs) to 473 feet bgs (i.e., about 2 feet above the top of the screen). NEWP used the drill rig winch to surge the filter pack with a surge block after placement for about 20 minutes; additional filter pack material was installed after surging to bring the top back to the desired depth. NEWP then surged the filter pack for an additional 20 minutes. The driller installed a transition seal consisting of Lapis Lustre #60 sand (find sand) above the filter pack from approximately 473 to 463 feet bgs and surged the transition seal for about 20 minutes. Residual drilling mud was displaced with filter pack and water (via a tremie pipe) during annular material installation.

NEWP installed an approximately 60-foot-long lift of sanitary seal consisting of neat cement grout from the top of the transition seal and allowed to cure for about 8 hours. Additional sanitary seal lifts were placed in approximately 100-foot-long intervals, each with a minimum cure time of about 8 hours, per NEWP guidelines, to reduce the potential for overheating the PVC casing and causing compression failure. NEWP placed the final lift of sanitary seal on September 11. Well construction details are summarized in Table A-1 and are shown in graphic form in Appendix C.

Well Development

Test Well

Following completion of PW-1 construction, NEWP further developed the well by bailing, surging, and pumping. BMcD monitored discharge water for sand content using a sand content kit provided by the well development contractor. BMcD periodically collected groundwater to measure water quality parameters (e.g., pH, temperature, specific conductance, oxidation-reduction potential [ORP], turbidity, and dissolved oxygen [DO]) using field instrumentation. BMcD recorded results of field parameter testing on field data sheets. Well development continued for 2 days, until nearly no sand was produced, per the sand content measured using the sand content kit, and water quality parameters stabilized for three successive readings. The three successive readings were within the following ranges:

- ± 0.1 standard unit for pH
- ± 3 percent for temperature
- ± 3 percent for specific conductance
- ± 10 millivolts for ORP
- ± 10 percent for turbidity
- ± 0.3 milligrams per liter for DO

Well development records are provided in Appendix D.

Observation Well

Following completion of OW-1 construction, NEWP further developed the well by bailing, surging, and pumping. BMcD monitored discharge water and recorded field parameter testing results as described above. Well development continued over the course of four days, until nearly no sand was produced, per the sand content measured using the sand content kit, and water quality parameters stabilized for three successive readings, as described above. Well development records are provided in Appendix D.

Groundwater Sample Collection and Analysis

Observation Well Development Sample

BMcD collected a groundwater sample from the observation well at the end of four days of development on September 17, 2014. The sample was collected from discharge from a Grundfos submersible pump by decanting water directly into laboratory-supplied sample containers. The sample bottles were sealed, labeled, placed in an ice-chilled cooler, and delivered under chain-of-custody procedures to AccuTest Laboratory, of San Jose, California, a state-certified analytical laboratory, for analysis. The analytical program is summarized in Table A-2.

Test Well Step-drawdown Well Test Sample

A groundwater sample was collected from PW-1 during the step-drawdown well test. Details of sampling methodology are provided in Section 2.2.4. The analytical program is summarized in Table A-2.

Test Well Constant-rate Well Test Samples

Additional groundwater samples were collected from PW-1 during the constant-rate well test. Details of sampling methodology are provided in Section 2.2.4. The analytical program is summarized in Table A-2.

Soil Sample Collection and Analysis

A soil sample was collected to characterize soil cuttings for disposal. The sample was collected by placing soil cuttings in new, clean, stainless steel sleeves, which were sealed with Teflon sheets, plastic end caps, and silicone tape; labeled; sealed in plastic bags; and placed in an ice-chilled cooler. The sample containers were submitted to Enviro-Chem, Inc., of Pomona, California, a state-certified analytical laboratory, under chain-of-custody protocols for compositing and analysis for California Assessment Manual (CAM) 17 metals using U.S. Environmental Protection Agency (EPA) Methods 6010B/7470A.

Surface Completion

Well casing was extended approximately 2 to 3 feet above ground surface and secured aboveground with a steel stovepipe monument and a locking, hinged, water-tight well cap that was welded or screwed onto the well casing stick-up and secured with a lock. A concrete pad measuring approximately 4 feet by 4 feet (approximately 4 inches thick) was constructed around the casing and yellow bollards were installed at four corners around the pad to ensure maximum visibility and protection of the wells.

Table A-2: Water Sampling Analytical Program						
Analyte	Analytical Method (EPA unless specified)	Development Sample (OW-1)	Step-drawdown Test Sample (PW-1)	Constant-rate Test Samples (PW-1)		
Sample Date		9/17/14	10/5/14	10/7/14	10/8/14	10/9/14
Field Measurements						
pH	Field meter/flow-through cell	x	x	x	x	x
Specific Conductance	Field meter/flow-through cell	x	x	x	x	x
ORP	Field meter/flow-through cell	x	x	x	x	x
Temperature	Field meter/flow-through cell	x	x	x	x	x
DO	Field meter/flow-through cell	x	x	x	x	x
Turbidity	Turbidimeter	x	x	x	x	x
Laboratory Analysis						
TDS	SM 2540	x	x	x	x	x
Total Nitrate/Nitrite (as N)	SM 4500-NO3	x	x	x	x	x
Carbonate/Bicarbonate Alkalinity	SM 2320B[1]	x	x	x	x	x
Sulfate	300.0	x	x	x	x	x
Chloride	300.0	x	x	x	x	x
Calcium	6010B	x	x	x	x	x
Magnesium	6010B	x	x	x	x	x
Sodium	6010B	x	x	x	x	x
Potassium	6010B	x	x	x	x	x
Isotopes ($\delta^{2}H$, $\delta^{18}O$, $\delta^{34}S$, $\delta^{13}C$ (DIC), $\delta^{13}C$ (DOC), ^{14}C, $E^{3}H$)	Various[2]	--	--	--	--	x

Table A-2: Water Sampling Analytical Program				
Analyte	**Analytical Method (EPA unless specified)**	**Development Sample (OW-1)**	**Step-drawdown Test Sample (PW-1)**	**Constant-rate Test Samples (PW-1)**
$\delta^{13}C$ = carbon-13			EPA = U.S. Environmental Protection Agency	ORP = oxidation-reduction potential
^{14}C = carbon-14			$\delta^{2}H$ = deuterium	$\delta^{34}S$ = sulfur-34
DIC = dissolved inorganic carbon			$E^{3}H$ = tritium	SM = standard method
DO = dissolved oxygen			N = nitrogen	TDS = total dissolved solids
DOC = dissolved organic carbon			$\delta^{18}O$ = oxygen-18 (^{18}O:^{16}O)	

Surveying

The wells were surveyed for horizontal and vertical positions by Big Sky Land Surveying, a state-licensed land surveyor, on October 13, 2014. Horizontal positions were measured to an accuracy of 1.0 foot and were referenced to the California State Coordinate System and the North American Datum of 1983 (NAD 83). Vertical positions were measured to an accuracy of 0.01 foot and were referenced to North American Vertical Datum of 1988 (NAVD 88). Vertical positions were measured at the top of well casing and top of sounding tube (north side), and at the top of the concrete pad at each well location. The survey report is included in Appendix G.

DOCUMENTATION

Well completion reports (DWR Form 188) will be completed for each well and submitted to DWR, BLM, and the County.

WASTE MANAGEMENT

Soil samples were collected from three on-site 20-cubic-yard soil bins and submitted for chemical analysis to provide data for waste characterization, as described in Section 2.3.6. Between August 23 and September 4, 2014, suspended clay and water were skimmed from the tops of the soil bins and transported off site to K-Pure Waterworks in Rancho Cucamonga, California, by United Pumping Service, Inc. (UPSI), a licensed waste hauler. The three soil bins were removed and replaced when they became full during the course of borehole drilling, reaming, and development over the following 4 weeks. Spoils were transported off site for disposal following characterization as nonhazardous waste (see Section 4 for a description of analytical profiling results). UPSI and North State Environmental performed all off-site waste transport during the field program.

PALEONTOLOGIC SURVEY

Kim Scott of Cogstone Resource Management, Inc., was on site September 2 through 4, 2014. Ms. Scott performed a limited paleontologic survey in the vicinity of the work area and passed soil cuttings through sieves to identify paleontologic resources. Crinoid stems and gypsum crystals were observed in the cuttings. The paleontological survey report is included in Appendix H.

Appendix B:
Well Permits

RANCHO HESPERIA SAN BERNARDINO

County of San Bernardino
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SERVICES
RECEIPT FOR SERVICES

RECEIPT # 110255

DATE 7/8/14 SUPERVISORIAL DISTRICT (circle one) 1 2 3 4 5

RECEIVED BY Grace Hernandez
RECEIVED FROM Galen Kenoyer
ADDRESS 1 Pointe Drive, Ste 540
CITY ST ZIP Brea, CA 92821

PAID BY
CASH $
CHECK (# 190109599) $ 742.00
TOTAL $ 742.00

DESCRIPTION Well permit
APN: 0543-231-17-0000

FACILITY NO	CITY CODE	QTY	P/E	SR#	PROGRAM	REVENUE	AMOUNT
		1	4555	64599	5500	9800	371.00
		1	4555		5500	9800	371.00

510123 Receipt for Services.INDD TOTAL $ 742.00

01-16858-611 Rev 4/13
5100 008 H62

DISTRIBUTION White - Customer Canary - FAS Green - FAS Pink - Office

PRINTED ON LINEMARK PAPER - HOLD TO LIGHT TO VIEW. FOR ADDITIONAL SECURITY FEATURES SEE BACK

0001901 Office AU # 11-24 1210(8) 110255 5500/9800

PERSONAL MONEY ORDER 0190109599

Operator I.D u349433

July 07, 2014

PAY TO THE ORDER OF ***SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC *** ***HEALTH***

****Seven hundred forty-two dollars and no cents****

$742.00

WELLS FARGO BANK, N.A.
203 YALE AVE
CLAREMONT, CA 91711
FOR INQUIRIES CALL (480) 394-3122

VOID IF OVER US $ 742.00

Galen Kenoyer
Purchaser's Signature

Details on Back

⑈0190109599⑈ ⑆121000248⑆4861 505386⑈

APPLICATION FOR WELL PERMIT

OFFICE USE ONLY	County of San Bernardino Department of Public Health DIVISION OF ENVIRONMENTAL HEALTH SERVICES Phone: (800) 442-2283 www.sbcounty.gov/dph/dehs *(Please print)*	OFFICE USE ONLY
Permit Number 2014070401 Record ID (WP) WP22699 Expiration 01-17-2015 FF FA SN		Date 07-08-2014 SR 64599

1. OWNER: Name U.S. Bureau of Land Management
Site Address Zzyzx Rd, ~1.5 mi north of I-15
City Unincorporated San Bernardino County Zip 92309
Mailing Address 22835 Calle San Juan De Los Lagos
City Moreno Valley, CA Zip 92553
Telephone Number (951) 697-5200

2. WELL DRILLER: National Exploration
Business Name
8/11/14 Start Date
8/28/14 Completion Date
(Estimated)

3. INTENDED WELL USE (*check*):
☐ Agricultural ☐ Horizontal ☒ Test
☐ Cathodic ☐ Monitoring/Observation ☐ Dairy
☐ Residential ☐ Community/PWS/City ☐ Other
☐ Industrial ☐ Geothermal ☐ Mining

4. TYPE OF WORK (*check*):
☒ New ☐ Reconstruction ☐ Destruction

Items 6 through 9 to be estimated for new wells, exact for all other wells

5. ANNUALAR SEAL: Seal Depth 240 ft.
Furnished by: ☐ Owner ☒ Contractor
☒ Driven Conductor Dia. 22 in., Wall (Gage) 0.375"
☒ Sealing Material neat cement Thickness 4.5 in. (annulus)
Sealing material shall be placed in one continuous pour.

6. DEPTH OF WELL (feet):
Proposed 352 Existing —
DIAMETER OF BORE (in.): 12 (pilot); 20 (reamed)

7. CASING INSTALLED: ☐ Casing standard
☒ Steel ☐ Plastic ☐ Standard casing ☐ Other

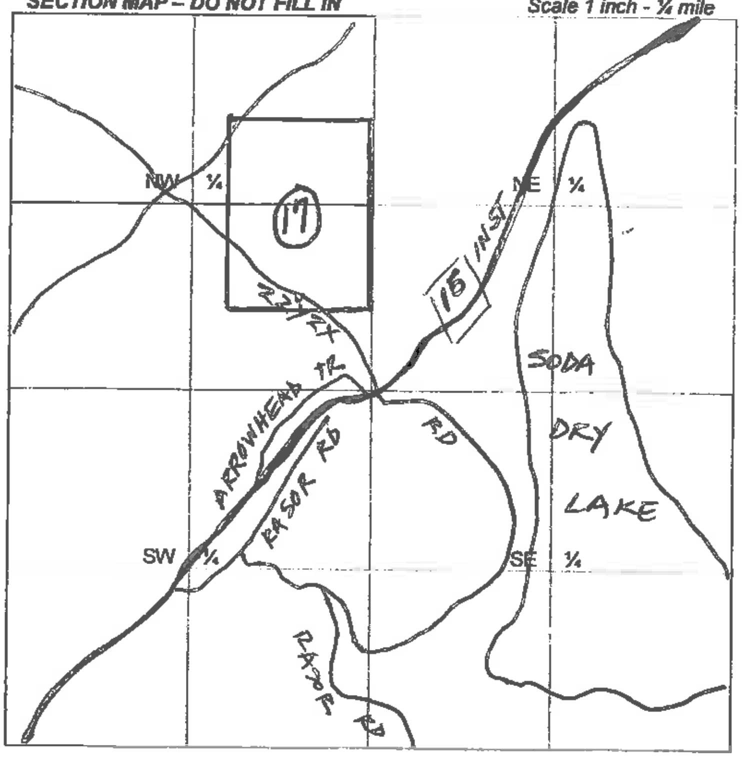
From (ft.)	To (ft.)	Dia. (in.)	Wall (Gage)	
352	252	10.75	0.25"	screen
202	0	10.75	0.25"	blank

Gravel Pack: ☒ Yes ☐ No
From 250 to 352 ft.

8. PERFORATIONS (*if applicable*):
From 252 to 352 ft.
Pumping rate (gpm) 50-200 (to be determined)

9. SEALED ZONES (*if applicable*):
From — to — ft.

SECTION MAP – DO NOT FILL IN Scale 1 inch - ¼ mile



10. LOCATION INFORMATION 706 D2
(a) TOWNSHIP:
Tier 13 (N)/S Range 8 (E)/W Section 17
(b) Assessor's Parcel No. 0543231170000
(c) Latitude and Longitude
Lat: 35.20806
Long: -116.161916
(d) Solid or Liquid Disposal Site within Two Miles
☐ Yes ☒ No
Location —

OFFICE USE ONLY	
Seal	
Cap	
Check Valve	
Electricals	
6 ft x 6 ft Slab	
Tag	
Building & Safety Notified	

5/30/14

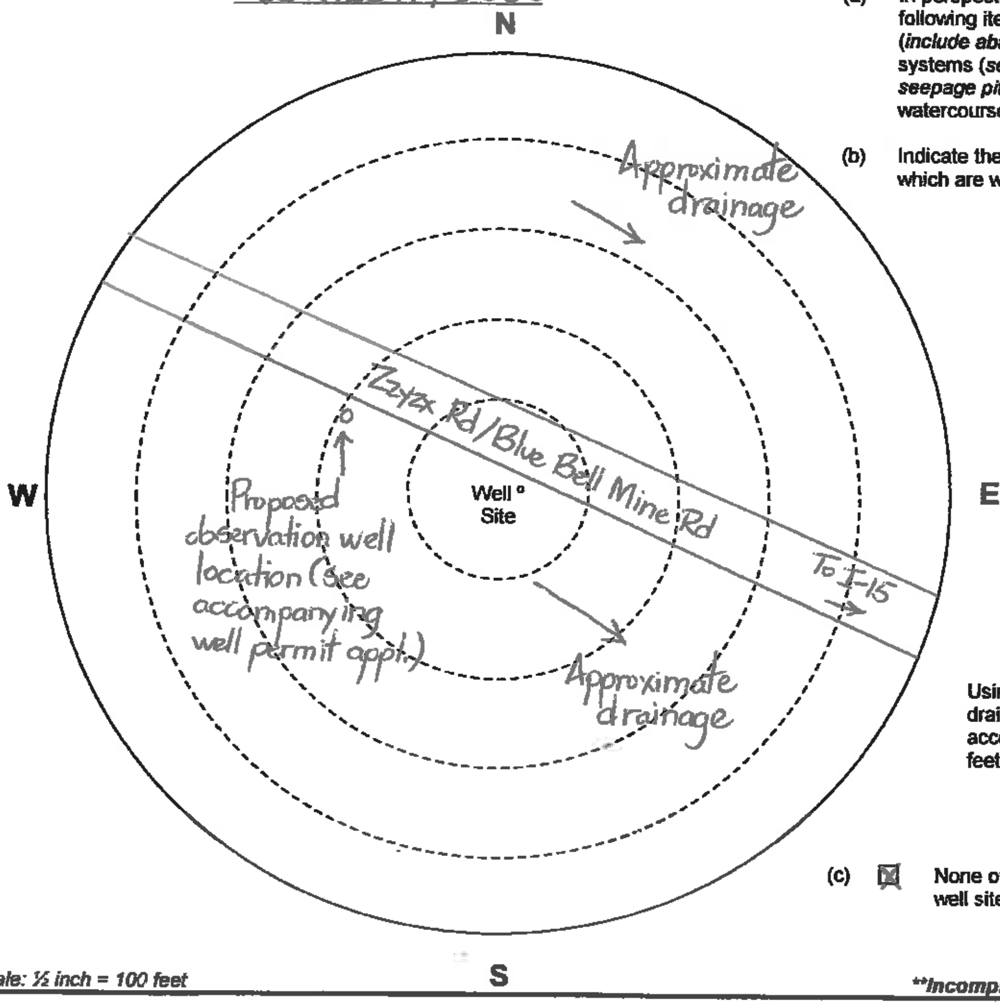
Assessor's Parcel No. 0543231170000

11. PLOT PLAN:

(a) In perspective to the well site, sketch and label the following items: well lot property lines, other wells (*include abandoned wells*), sewage disposal systems (*sewers, septic tanks, leaching fields, seepage pits, cesspools*), lakes and ponds, watercourses and animals or fowl kept.

(b) Indicate the distance, in **feet**, of any of the following which are within 500 ft. of the well site:

Other	—
Sewers	—
Septic tanks	—
Leaching fields	—
Seepage pits	—
Cesspools	—
Lakes and ponds	—
Watercourses	—
Animal or fowl kept	—



Using an arrow, show the approximate drainage pattern of the property and show access roads to the well site within 500 feet.

(c) ☒ None of the above are within 500 feet of the well site.

Scale: ½ inch = 100 feet

Incomplete applications will be returned.

12. I have read this application and agree to comply with all laws regulating the type of work being performed.

C-57 Contractor's Signature [signature] Date 7/7/2014

County Registration No. 329 California License No. 953646

OFFICE USE ONLY – DO NOT WRITE BELOW THIS LINE

DISPOSITON OF PERMIT

☐ Sent to Water Agency for review.
☐ Water Agency conditions or recommendations attached.
☐ Denied
☒ Approved subject to the following:

A. ☐ Notify the Division's Safe Drinking Water Program at (800) 442-2283 at least seventy two (72) hours in advance to make an inspection of the following operations: (Inspections are scheduled Monday – Friday 8:00 AM to 5:00 PM)
- ☐ Prior to sealing of the annular space or filling of the conductor casing.
- ☐ After installation of the surface protective slab and pumping equipment.
- ☐ During destruction of wells, prior to pouring the sealing material.

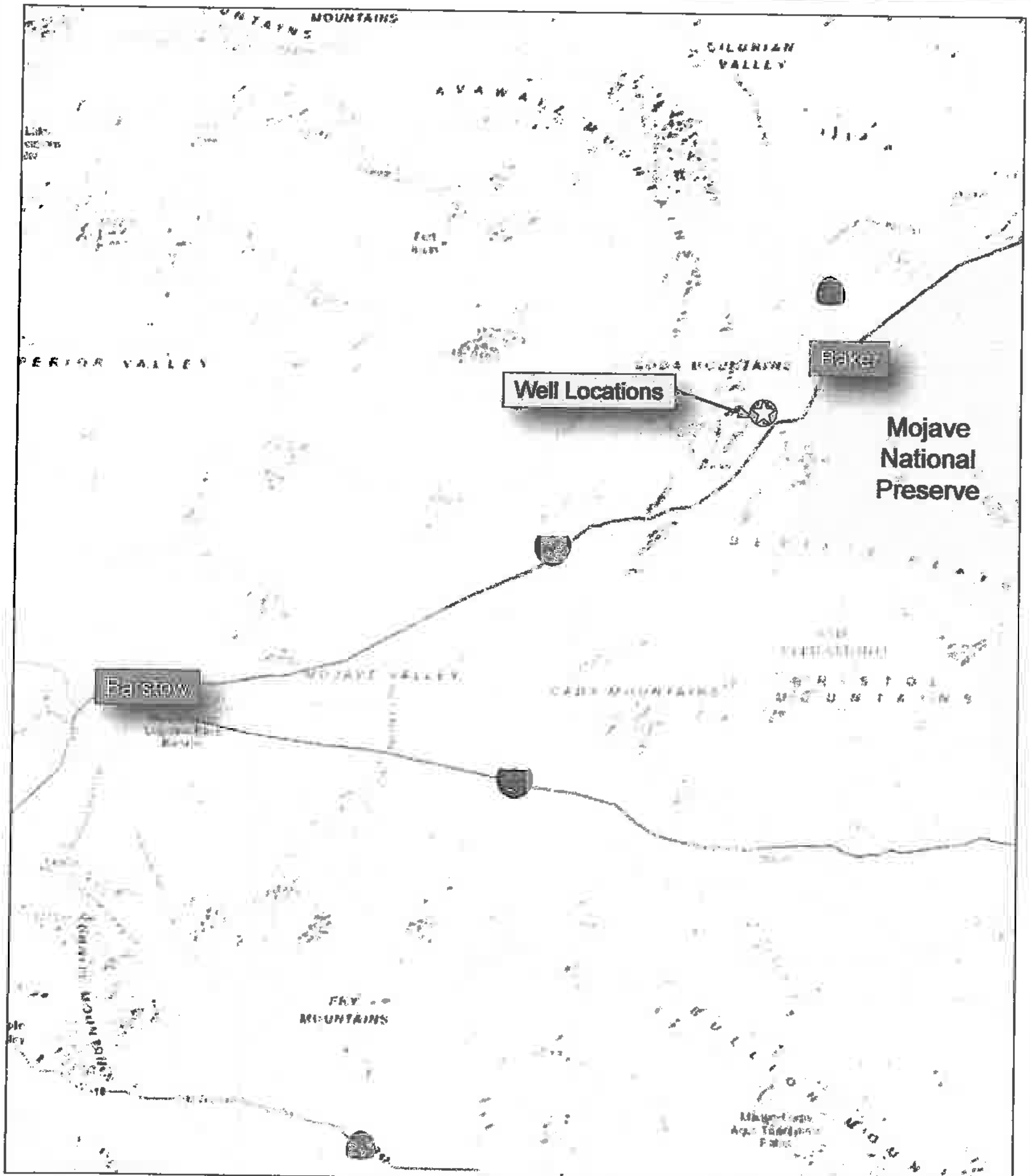
B. ☒ Submit to the Department, within thirty (30) days after completion of work, a copy of:

☒ Water Well Driller's Report ☐ Bacterial Analysis ☐ Inorganic Chemical Analysis
☐ Radiological Analysis ☐ General Mineral ☐ Organic Chemical analysis ☐ General Physical

Comments

 5/30/14

Well Locations Map



SOURCE: ESRI 2014 and Panorama Environmental, Inc. 2014

Scale: 1:750,000

LEGEND

Well Locations

Miles 0 5 10 20

PANORAMA ENVIRONMENTAL, INC.

APPLICATION FOR WELL PERMIT

OFFICE USE ONLY	
Permit Number	2014070402
Record ID (WP)	WP22700
Expiration	07-17-15
FF	
FA	
SN	

County of San Bernardino
Department of Public Health
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
Phone: (800) 442-2283
www.sbcounty.gov/dph/dehs

(Please print)

OFFICE USE ONLY	
Date	07-08-2014
SR	64599

1. OWNER: Name U.S. Bureau of Land Management
Site Address Zzyzx Rd, ~1.5 mi north of I-15
City Unincorporated San Bernardino County Zip 92309
Mailing Address 22835 Calle San Juan De Los Lagos
City Moreno Valley, CA Zip 92553
Telephone Number (951) 697-5200

2. WELL DRILLER: National
Business Name
7/24/14 Start Date — 8/8/14 Completion Date (Estimated)

3. INTENDED WELL USE (*check*):
- ☐ Agricultural ☐ Horizontal ☐ Test
- ☐ Cathodic ☒ Monitoring/Observation ☐ Dairy
- ☐ Residential ☐ Community/PWS/City ☐ Other
- ☐ Industrial ☐ Geothermal ☐ Mining

4. TYPE OF WORK (*check*):
☒ New ☐ Reconstruction ☐ Destruction

Items 6 through 9 to be estimated for new wells, exact for all other wells

5. ANNUALAR SEAL: Seal Depth 175 ft.
Furnished by: ☐ Owner ☒ Contractor
☐ Driven Conductor Dia. — in., Wall (Gage) —
☒ Sealing Material neat cement Thickness 3 in. (annulus)
Sealing material shall be placed in one continuous pour.

6. DEPTH OF WELL (feet):
Proposed 352 Existing —
DIAMETER OF BORE (in.): 10

7. CASING INSTALLED: ☐ Casing standard
☐ Steel ☐ Plastic ☐ Standard casing ☒ Other Sch. 80 PVC

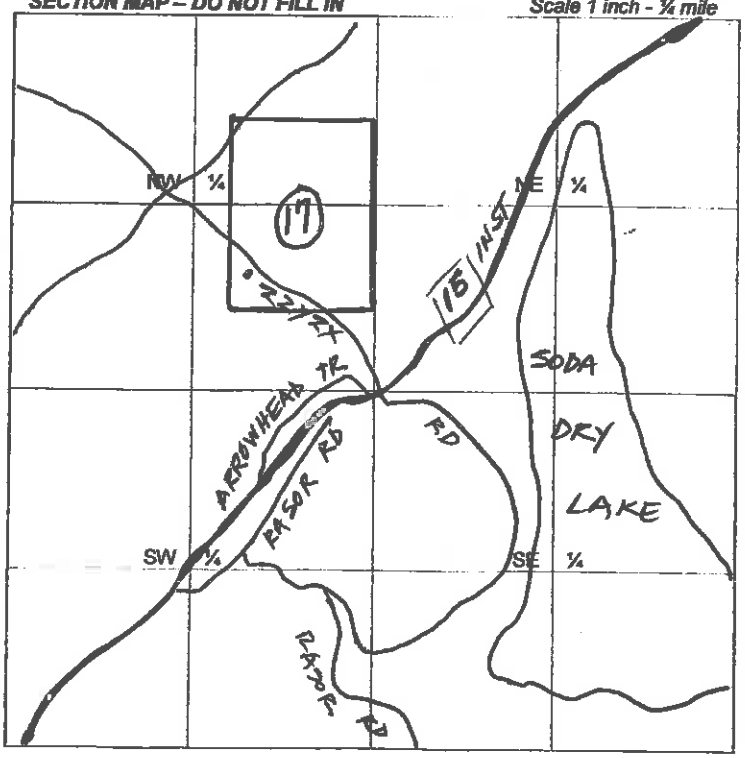
From (ft.)	To (ft.)	Dia. (in.)	Wall (Gage)	
352	182	4	Sch.80	screen
182	0	4	Sch.80	blank

Gravel Pack: ☒ Yes ☐ No
From 180 to 352 ft.

8. PERFORATIONS (*if applicable*):
From 182 to 352 ft.
Pumping rate (gpm) NA

9. SEALED ZONES (*if applicable*):
From — to — ft.

SECTION MAP – DO NOT FILL IN Scale 1 inch - ¼ mile

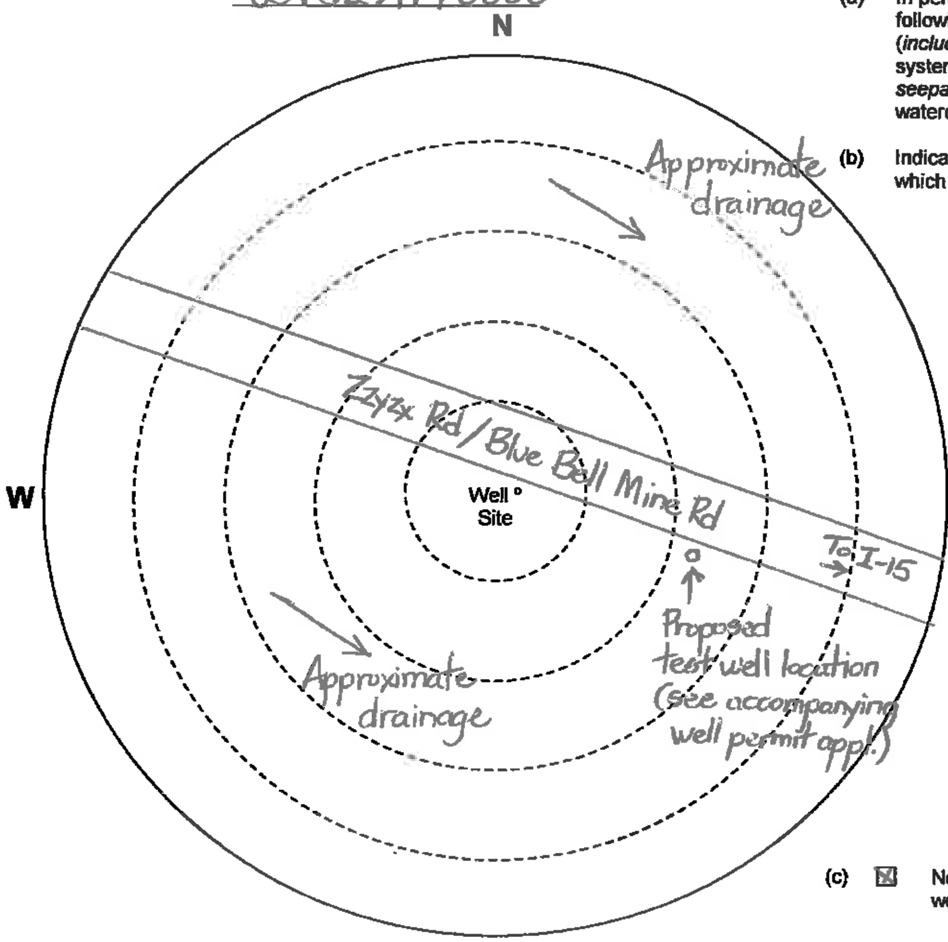


10. LOCATION INFORMATION 706 D 2
(a) TOWNSHIP:
Tier 13 (N)/S Range 8 (E)/W Section 17
(b) **Assessor's Parcel No.** 054323117000 0
(c) Latitude and Longitude
Lat: 35.208344
Long: -116.162336
(d) Solid or Liquid Disposal Site within Two Miles
☐ Yes ☒ No
Location —

OFFICE USE ONLY	
Seal	
Cap	
Check Valve	
Electricals	
6 ft x 6 ft Slab	
Tag	
Building & Safety Notified	

 5/30/14

Assessor's Parcel No. 0543231170000



11. PLOT PLAN:

(a) In perspective to the well site, sketch and label the following items: well lot property lines, other wells (*include abandoned wells*), sewage disposal systems (*sewers, septic tanks, leaching fields, seepage pits, cesspools*), lakes and ponds, watercourses and animals or fowl kept.

(b) Indicate the distance, in feet, of any of the following which are within 500 ft. of the well site:

Other	—
Sewers	—
Septic tanks	—
Leaching fields	—
Seepage pits	—
Cesspools	—
Lakes and ponds	—
Watercourses	—
Animal or fowl kept	—

Using an arrow, show the approximate drainage pattern of the property and show access roads to the well site within 500 feet.

(c) ☒ None of the above are within 500 feet of the well site.

Scale: ½ inch = 100 feet

Incomplete applications will be returned.

12. I have read this application and agree to comply with all laws regulating the type of work being performed.

C-57 Contractor's Signature [signature] Date 7/7/2014

County Registration No. 329 California License No. 953646

OFFICE USE ONLY – DO NOT WRITE BELOW THIS LINE

DISPOSITON OF PERMIT

- ☐ Sent to Water Agency for review.
- ☐ Water Agency conditions or recommendations attached.
- ☐ Denied
- ☒ Approved subject to the following:

A. ☐ Notify the Division's Safe Drinking Water Program at (800) 442-2283 at least seventy two (72) hours in advance to make an inspection of the following operations: (Inspections are scheduled Monday – Friday 8:00 AM to 5:00 PM)

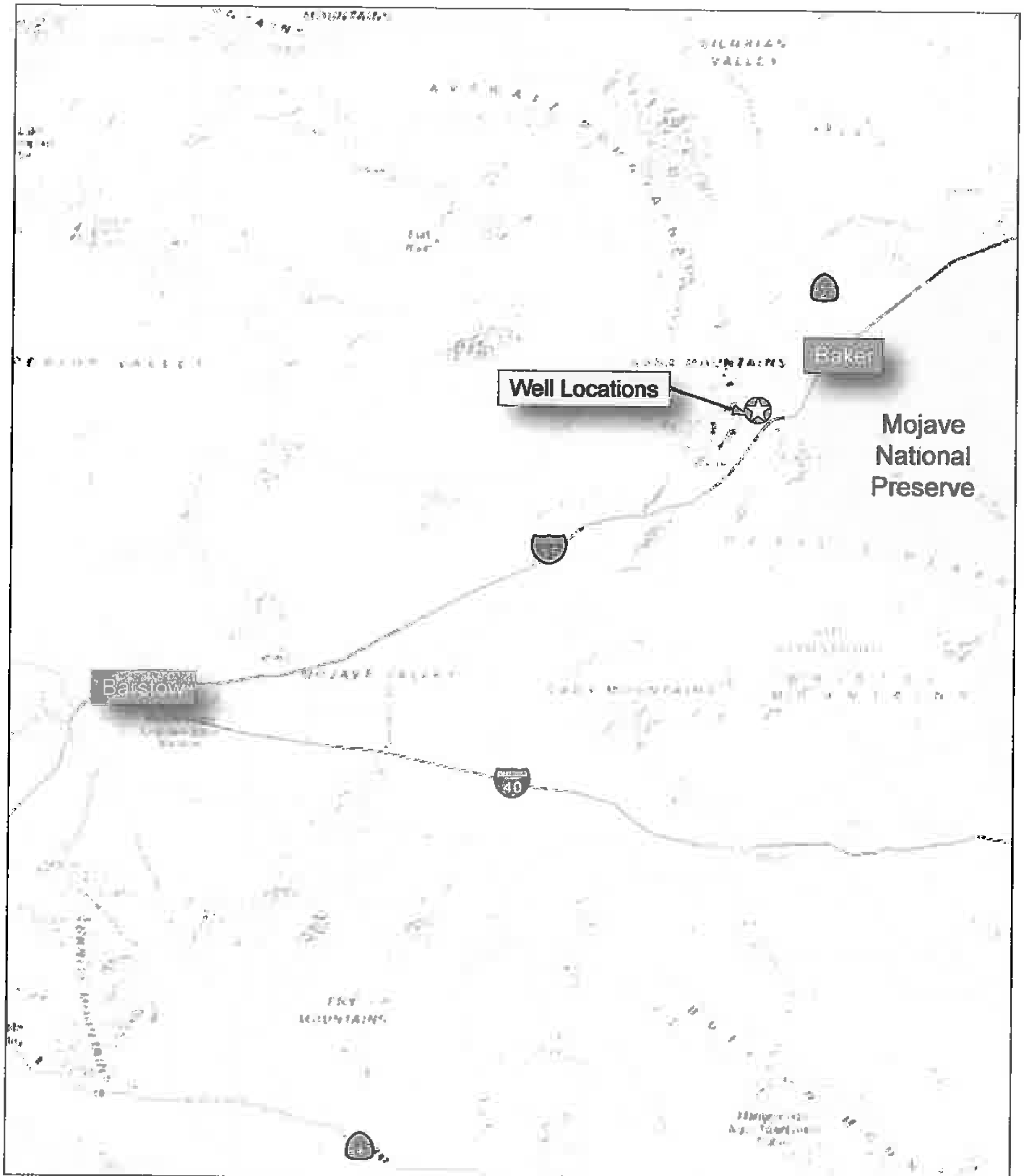
- ☐ Prior to sealing of the annular space or filling of the conductor casing.
- ☐ After installation of the surface protective slab and pumping equipment.
- ☐ During destruction of wells, prior to pouring the sealing material.

B. ☒ Submit to the Department, within thirty (30) days after completion of work, a copy of:

☒ Water Well Driller's Report ☐ Bacterial Analysis ☐ Inorganic Chemical Analysis
☐ Radiological Analysis ☐ General Mineral ☐ Organic Chemical analysis ☐ General Physical

Comments

Well Locations Map



SOURCE: ESRI 2014 and Panorama Environmental, Inc. 2014

Scale: 1:750,000

LEGEND

N

Well Locations

Miles
0 5 10 20

PANORAMA
ENVIRONMENTAL, INC.

Appendix C: Geologic Logs and Well Construction Diagrams

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell

Project Name	Project Number	Boring/Well Number
Soda Mountain	77511	PW-01

Ground Elevation	Location	Page
	Blue Bell Mine Road, Baker, CA	1 of 19

Air Monitoring Equipment	Total Footage
NA	555

Drilling Method	Borehole Size	Casing Type/Diam.	Screen Type/Slot	Depth to Water	Top of Casing Elevation
Mud Rotary	20"	Sch 80 PVC/10.75, 2, 3.25"	Perf PVC/0.020"	450.1 ft. bgs	

Drilling Company:	National E.W.P.	Driller(s):	Jason Layton
Drilling Rig:	Speed Star	Type of Sampler:	Shaker Screen
Date:	8/18/14	Logged by:	Simon Barber

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
0	GW GM	Well-graded GRAVEL with Silt: tan, red, olive, black gravel and brown, fine sands and silts, angular to sub-rounded, loose, dry. (Remark- At 2'bgs 12-inch conduit casing to 20 ft. bgs)								Bentonite Grout 0-458ft bgs
10	SW SM	Well-graded SAND with Silt: fine to coarse sand, angular to sub-rounded, loose homogenous, 15-25% fine angular gravel, white, black, olive, tan, brown grains. (Remark- At 10'bgs water added for dust control. At 12'bgs rods bouncing)								PW-01: 10.75" diameter Sch 80 PVC PW-01 ST: 2" diameter Sch 80 PVC (0.020-slot 500-520ft bgs) PW-01 FT: 3.25" diameter Sch 80 PVC (no screen)
20	SW	Well-graded SAND: coarse, grain colours, white, red, olive, black; angular to sub-angular								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 2 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW									
30	SW	As above, 5-10% fine gravel up to 1cm, angular, black to gray gravel.								
35										
40	SW SM	Well-graded SAND with Silt: coarse angular to sub-angular sand. grain colours: white, olive, tan, red, black. 5-10% fine angular gravel to 1cm, colours as sand. (Remark- At 40'bgs rods kicking. At 49'bgs cave in during rod trip.)								
45										
50	SW SM	As above, gravel increasing, 25% fine gravel, olive, tan, and black grains. (Remark- At 51'bgs rods kicking. gravel/boulder beds.)								
55										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 3 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW SM									
60	SW SM	Well-graded SAND with Silt: fine to coarse angular to sub-angular coarse sand, white, black, olive, red grains, 25-35% angular gravel, colours above, homogenous, loose.								
65										
70	GP	Poorly-graded GRAVEL with Sand: angular gravel to 1 cm, white, tan, olive, brown, black grains. Sand coarse angular, fine sand, 20%.								
75										
80	SW	Well-graded SAND with Gravel: medium to coarse, white, tan, red, olive, black. Sub-angular homogenous sand, 35% angular gravel to 1cm, olive, red, black, salt & pepper grains.								
85										

BZ=Breathing Zone BH=Bore Hole S=Sample

Boring/Well Construction Log

Burns & McDonnell

Project Name: Soda Mountain | Project Number: 77511 | Boring/Well Number: PW-01

Ground Elevation: | Location: Blue Bell Mine Road, Baker, CA | Page 4 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW									
90	SW	As above, SAND, little to no fines, 15% fine angular gravel.								
95										
100	GW	Well-graded GRAVEL with Sand: (SIMON), red, black fine gravel to 1cm. 45% fine to coarse sand, angular to sub-rounded, little to no fines.								
	GW	Primarily dark grains (Remark- At 102' and 106.5'bgs rods kicking. At 110'bgs clogged mud/back flow.)								
105										
110	GW	Same as above but tan, white, black, olive, red grains, angular to sub-rounded fine gravel to 1cm, fine to coarse sand, 20%.								
115										

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 5 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	GW									
120	SW	Well-graded SAND with Gravel: fine to coarse sand, white, tan, brown, red, olive, salt & pepper grains, angular to sub-rounded sand, 25-35% angular to sub-angular gravel to 1cm, homogenous, loose, trace fines. (8/22/14) (Remark- At 127.5'bgs rods kicking.)								
125										
130	SW	Well-graded SAND with Gravel, as above, 35-45% gravel, 5% fines.								
135										
140	GW GC	Well-graded GRAVEL with CLAY: 55% sub-angular to sub-rounded, fine gravel to 1cm, olive, black, tan grains, fine to coarse sand, sub-angular to sub-rounded, 40% fines. (Remark- At 150'bgs drilling stopped.)								
145										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 6 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	GW GC									
150	SW	Well-graded SAND: fine to medium sand, tan, brown, white, black, olive, red grains, sub-angular to sub-rounded. Coarse sub-angular to sub-rounded, 5-15% gravel, angular to 1cm, approximately 5% fines, homogenous. (Remark- At 158'bgs clay beds.)								
155										
160	SW	Well-graded SAND with Gravel: sand grains, as above, sub-angular to sub-rounded, fine to coarse sand. Sub-angular to sub-rounded gravel, 30%, mainly dark grains. Heterogenous with trace silt and clay, 5%. (Remark- At 160'bgs shaker clogged. At 164.5'bgs rods kicking.)								
165										
170	SW SC	Well-graded SAND with CLAY, 5-15% clay. (Remark- At 170'bgs more fines and fine sub-angular gravel in shaker chute.)								
175										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 7 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW SC									
180	SW SC	Well-graded SAND with Clay and Gravel: fine to medium sand, brown, black, tan, olive grains sub-angular to sub-rounded. Sub-angular coarse sand 15-20%. 15-20% sub-angular gravel to 1cm, trace silt. (Remark- At 187'bgs rods spinning easily.)								
185										
190	SW SC	As above, grain size decreasing, fine to medium sand with 25% coarse sand, 30% fine gravel, trace silt. (Remark- At 195'bgs rods spinning really smooth.)								
195										
200	CL	Lean CLAY: 10YR 6/4, soft to very soft, trace silt, very loose, trace sand and fine gravel.								
205										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 8 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
210	CL	Lean CLAY: as above.								
215										
220	CL	Lean CLAY: as above.								
225										
230	CL	Lean CLAY: as above, less than 3% fine, trace silt.								
235										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 9 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
240	CL	Lean CLAY: 10YR 6/4, trace silt, trace fine gravel, less than 1%.								
245										
250	CL	Lean CLAY: 10YR 6/4, trace silt, trace fine gravel, less than 1%.								
255										
260	CL	Lean CLAY: 10YR 6/4, 1-3% fine sand, trace silt.								
265										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 10 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
270	CL	Lean CLAY: 10YR 6/4, 1-3% fine sand, trace silt.								
275										
280	CL	Lean CLAY: 10YR 6/4, 1-3% fine sand, trace silt.								
285										
290	CL	Lean CLAY: 10YR 6/4, trace silt.								
295										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 11 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
300	CL	Lean CLAY: 10YR 6/4, trace silt.								
305										
310	CL	Lean CLAY: 10YR 6/4, trace silt. (Remark- At 310'bgs slow drilling. thick clays.)								
315										
320	CL	Lean CLAY: 10YR 6/4, trace silt. (Remark- At 320'bgs driling stopped due to water vendor stuck.)								
325										

BZ=Breathing Zone BH=Bore Hole S=Sample

BORING/WELL ONTARIO AIRPORT LOGS V5.GPJ BURNS&MC.GDT 11/13/14

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 12 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
330	CL	Lean CLAY: 10YR 5/4, 5% fine sand, sub-rounded to rounded, white, tan, olive grains. (Remark- At 330'bgs transition?)								
335										
340	CL	Lean CLAY: 10YR 5/4, 5% fine sand, sub-rounded to rounded, white, tan, olive grains.								
345										
350	SC	CLAYEY SAND: fine to medium sand, brown, sub-rounded, homogenous.								
355										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 13 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SC									
360	SC	As above, fine sand, sub-rounded.								
365										
370	SC	CLAYEY SAND; fine to medium, sub-angular to sub-rounded sand.								
375										
380	SC	CLAYEY SAND; fine to medium sand, as above. (Remark- At 380'bgs seeing some coarse sand, grain size increasing. At 384'bgs rods bouncing.)								
385										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 14 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SC									
390	SW SC	Well-graded SAND with Clay: fine to medium sand, sub-angular to sub-rounded, poorly-graded sand with clay, 10% coarse sand, sub-angular to sub-rounded, loose.								
395										
400	SW	Well-graded SAND: fine to medium, sub-angular to rounded sand, 5-10% coarse sub-angular to sub-rounded sand, 1-3% fine gravel, poorly-graded with fines, loose.								
405										
410	SW	Well-graded SAND: well-graded medium to coarse sand, 30% fine sand, 1-3% fine angular gravel, loose.								
415										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 15 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
420	SW	Well-graded SAND, as above, coarse sand increasing, 25-35%, 1-3% gravel trace fines.								
425										
430	SW SM	Well-graded SAND with Silt: medium to coarse, sub-angular to sub-rounded. 10-20% fine sand, 5% fine gravel, trace fines, loose.								
435										
440	SW SM	Same as above.								
445										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 16 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	Well-graded SAND: medium to coarse ,sub-angular to sub-rounded, 20-30% fine sand, 1-3% fine gravel, loose. sand: white, tan, brown, black, olive, milky grains. fine gravel: brown, black, olive.								
455										
										Transition Sand 458-470ft bgs
460	SW	As above, but becoming coarser grained.								
465										
470	SW	Same as above.								Sand Interval 470-555ft bgs
475										0.070-louvered slot 475-545ft bgs (PW-01)
480	SW									

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 17 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	Well-graded SAND: medium to coarse, sub-angular to sub-rounded, 30-35% coarse sand, 15-20% fine sand, loose. (8/27/14)								
485										
490	SW	As above. (Remark- At 497 some resistance on drill rods.)								
495										
500	SW	Well-graded SAND: medium to coarse sand with fines, 30-35% coarse sand, sub-angular to sub-rounded, 55% medium (coarse end), sub-angular to sub-rounded, no gravel, loose. (Remark- At 505'bgs drill rods bouncing, hard material.)								
505	SW	Same as above but drill rods bouncing indicates consolidated material. Appears to be disintegrated granite, with the character of well-graded sand from this point to total depth.								
510	SW	Well-graded SAND: medium to coarse,								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 18 of 19

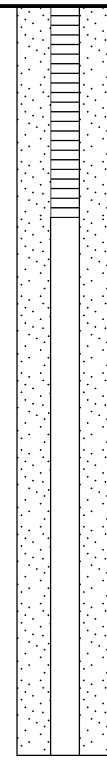
Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	10-15% fine sand, 40% medium (sub-angular to sub-rounded), 35% coarse (sub-angular to sub-rounded), 5% fine gravel, with fines, loose.								
515										
520	SW	Well-graded SAND: medium to coarse, 10-15% fine sand, 40% medium (sub-angular to sub-rounded), 35% coarse (sub-angular to sub-rounded), 5% fine gravel, with fines, loose. (Remark- At 520'bgs rod kicking. At 528'bgs hard, very little advancement, ~2 ft. thick.)								
525										
530	SW	Well-graded SAND: medium to coarse, as above, sub-angular to sub-rounded with sub-angular gravel. (9/23/14) (Remark- At 531'bgs slow advancement.)								
535										
540	SW	Well-graded SAND: medium to coarse, as above, sub-angular to sub-rounded								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain		Project Number: 77511	Boring/Well Number: PW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA		Page 19 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	with sub-angular gravel. (9/23/14) (Remark- At 541'bgs Boring terminated at 540 ft. bgs. On 9/23/14 extended to 555 ft. bgs to reem for wall construction. At 550'bgs rods kicking, slow advancement/drilling.)								
545										
550										
555		Total Depth of PW-01 = 555 ft. bgs Note: PW-01 is a 10.75" diameter production well screened from 475-545ft bgs. PW-01 ST is a 2" diameter sounding tube screened from 500-520ft bgs. PW-01 FT is a 3.25" diameter fill tube with no screen installed to 470ft bgs in order to replenish sand/gravel pack if needed.								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page: 1 of 19
Air Monitoring Equipment: NA			Total Footage: 555

Drilling Method	Borehole Size	Casing Type/Diam.	Screen Type/Slot	Depth to Water	Top of Casing Elevation
ARCH/Mud Rotary	10"	Sch 80 PVC/4"	Perf PVC/0.020"	455.4 ft. bgs	

Drilling Company:	National E.W.P.	Driller(s):	Jason Layton
Drilling Rig:	ARCH (0.180)	Type of Sampler:	Shaker Screen
Date:	8/28/14	Logged by:	Simon Barber

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
0	GW GC	Well-graded GRAVEL with Clay, fine to coarse, 45% sand, angular to sub-rounded, angular gravel 50% trace fines, grains black, red, olive, tan, granites and pink feldspars.								Bentonite Grout 0-468ft bgs
10	GW GC	As above, gravel to 2cm.								4" diameter Sch 80 PVC
20	GW GC	Well-graded GRAVEL with clay, sand, gravel grains as above, fine to medium sand 35%, coarse sand 15%, trace fines, gravel.								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 2 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	GW GC									
30	GW GC	Well-graded GRAVEL with clay, 55% angular gravel to 2cm, granite, pink feldspar, salt & pepper, olive, red, fine to coarse sand, sub-angular to rounded quartz.								
35										
40	GP	Poorly-graded GRAVEL, olive, purple, salt & pepper, pink, blues, angular to 1-inch. 15% medium to coarse sand, angular to sub-angular grains of gravel, trace fines.								
45										
50	GW	Well-graded GRAVEL, black, red, pink, olive, purple, angular to 1-inch, trace coarse sand, 40%, trace fines.								
55										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 3 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	GW									
60	GW	Same as above.								
65										
	GW	Trace water.								
70	GW	(Remark- hard) Welll-graded GRAVEL, gravel as above, 40%, medium to coarse sand, poorly-sorted, ~5% fines.								
75										
80	GP	Poorly-graded GRAVEL, black, olive, pink, salt & pepper, angular gravel to 1-inch. Medium to coarse angular to sub-angular sand, 5% fines.								
85										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 4 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	GP									
	GP	hard								
90	SW	Well-graded SAND, gravelly sand, colours as above, fine to coarse sand, 55% sub-angular to sub-rounded, 40% angular gravel to 1-inch, trace fines.								
95										
100	SW	Same as above, wet.								
105										
110	GW	Well-graded GRAVEL, dark red, olive, pink, white, clear, purple, black, angular gravel to 2 cm, fine to coarse angular to sub-angular sand, 40%, trace fines, wet.								
115										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 5 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	GW									
120	SW	Well-graded SAND, gravel and fine to coarse sand as above, 50% sands, 45% gravel, 5% fines.								
125										
	SW	(Remark- cuttings coming up slow, cuttings dark gray muddy)								
130	SW	As above, coarse sand fraction a bit less poorly sorted.								
135										
	SW	wet								
140	SW	Well-graded SAND, gravels, 55%, sand as above, fine to coarse sand, sub-angular to sub-rounded, 40%, angular gravel to 2cm, ~5% fines, wet.								
145										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 6 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW									
150	SW	Same as above.								
155										
160	SW	Well-graded SAND, fine to coarse sub-angular to sub-rounded sand, 55%, 45% angular fine gravel to 2cm, trace fines, grains as above, wet.								
165										
170	SW SC	Well-graded SAND with Clay, fine to coarse, sub-angular to sub-rounded sand, 65%, fine angular gravel to 1cm, 30%.								
175										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 7 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW SC									
180	SW	Well-graded SAND, fine to coarse as above, <5% fine angular gravel, trace clay.								
185										
190	SW SC	Well-graded SAND with clay, fine to coarse sub-angular to sub-rounded gravel, <5% fine angular.								
195										
200	SW SC	As above, <3% fine gravel.								
205										

BZ=Breathing Zone BH=Bore Hole S=Sample

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 8 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW SC									
210	SW	Well-graded SAND, fine to coarse sand, sub-angular to sub-rounded as above, 5% fine angular gravel...??								
215										
	SW	on something hard								
220	SW SC	Well-graded SAND with Clay, fine to medium sand, sub-angular to rounded, brown, red, black, olive, white grains. 5-10% angular to sub-angular coarse sand, black, red, olive, white grains. 1-5% fine angular gravel, red, olive, white and black grains (Remark- slow drilling, rods spinning NOT kicking but slow advancement, most likely clay caking on bit. White sand grains more rounded)								
225										
230	CL	Lean CLAY, 10YR 5/6, yellowish brown with fine to coarse sand, 25-35% fine to medium, 5-10% coarse sub-angular, 1-3% fine angular gravel.								
235										
	CL	(Remark- clay clumps in chute)								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 9 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
240	CL	Lean CLAY, as above, clay flocculating.								
245										
250	CL	Lean CLAY, 10YR 5/6, clay in clumps, dry, fine to medium sand. (Remarks- slow drilling at 249ft bgs, clay flocculating)								
255										
260	CL	As above, 1-5% very fine sand.								
265										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 10 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
270	CL	Lean CLAY, 10-15% trace fine sand.								
275										
280	CL	Lean CLAY, same as above.								
	CL	(Remark- slow drilling)								
285										
		(Remark- drilling mud addition, clay cutter								
290	CL	Lean CLAY, as above, clay flocculating. (Remark- clay clogging sieve)								
295										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 11 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
300	CL	Lean CLAY, as above, fine sand <5%.								
305										
310	CL	Lean CLAY, as above. (Remark- slow drilling)								
315										
	CL	Gypsum in cuttings								
320	CL	Lean CLAY, 10YR 5/6, clay in clumps, 1-3% very fine to fine sand, <1% fine gravel. (Remarks- clay swelling, slow drilling, granite angular fine gravel)								
325										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 12 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
330	CL	Lean CLAY, as above, no gravel.								
335										
340	CL	Lean CLAY, as above.								
345										
350	CL	Lean CLAY, as above, clumpy with very fine sand, 1-3%.								
355										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 13 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	CL									
360	CL	Sandy Lean CLAY, 10YR 5/6, sub-rounded very fine to fine sand, homogenous, loose, red, black, white, gray, olive grains ???lose 1% sub-rounded medium gravel								
365										
370	SC	Clayey SAND, 10YR 5/6 sub-rounded, very fine to fine sand, homogenous, loose, red, black, tan olive, 5-15%. (Remarks- transition zone?, sand increasing at ~372ft bgs)								
375										
380	SC	Clayey SAND, 10YR 5/6, fine to medium sub-angular to sub-rounded sand, homogenous, loose.								
385										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 14 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SC									
390	SW SC	Well-graded SAND with Clay, 10YR 5/6, fine to coarse, sub-angular to sub-rounded sand, black, tan, white, translucent, red, olive, purple, salt & pepper grains.								
	SW SC	(Remark- rods kicking)								
395										
400	SW SC	Well-graded SAND with Clay, fine to coarse sub-angular to sub-rounded sand, loose, homogenous grains as above, 15-25% coarse sand, 1% fine angular gravel (purple) to 1cm.								
405										
410	SW	Well-graded SAND, fine to coarse sub-angular to sub-rounded grains, as above, 15-25% coarse sand, 1-3% fine gravel, 1-5% fines.								
415										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 15 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
420	SW	Well-graded SAND, fine to coarse, sub-angular to sub-rounded, 15-25% coarse sand, 1-5% fine gravel, some fines.								
425										
430	SW	Well-graded SAND, fine to coarse sub-angular to subrounded sand, grains as above, 5% fine gravel, some fines.								
435										
440	SW	Same as above.								
445										

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ____________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 16 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	Same as above.								
455										
460	SW	Same as above. (Remarks- hard, slow drilling)								
465										
	SW	(Remarks- rods bouncing)								
										Transition Sand 468-473ft bgs
470	SW	Same as above, gravel 1-5%, coarse sand slightly decreasing. (Remarks- slow drilling)								
										#30 Lapis sand interval 473-555ft bgs 0.020 slot 475-545ft bgs
475										
480	SW									

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 17 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	Well-graded SAND, fine to coarse sub-angular to sub-rounded, brown, black, olive, red, purple, white grains, 5% fine angular gravel, some fines.								
485										
490	SW	Well-graded SAND, fine to coarse sub-angular to sub-rounded, brown, black, olive, red, purple, white grains, 5% fine angular gravel, some fines.								
495										
500	SW	As above, more round and light colour grains. (Remarks- slow drilling, rods bouncing)								
505										
510	SW	Well-graded SAND, fine to coarse								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 18 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW	sub-angular to sub-rounded, brown, black, olive, red, purple, white grains, 5% fine angular gravel, some fines. Interpreted to be disintegrated granite bedrock from this point to total depth.								
515										
520	SW	Same as above.								
525										
530	SW	Well-graded SAND, fine to coarse sub-angular to sub-rounded, brown, black, olive, red, purple, white grains, 5% fine angular gravel, some fines, coarse fraction 30-35%.								
535										
540	SW	Same as above.								

BZ=Breathing Zone BH=Bore Hole S=Sample

Reviewed By: ______________________

Boring/Well Construction Log

Burns & McDonnell	Project Name: Soda Mountain	Project Number: 77511	Boring/Well Number: OW-01
	Ground Elevation:	Location: Blue Bell Mine Road, Baker, CA	Page 19 of 19

Depth (feet) BGL	USCS	Lithologic Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	Sample	PID s	Well Diagram
	SW									
545										
550	SW	Same as above.								
555		Total depth of boring = 555ft bgs Note: Air Rotarty Casing Hammer (ARCH) to 180ft bgs Mud Rotary 180-555ft bgs								

BZ=Breathing Zone BH=Bore Hole S=Sample

Appendix D: Geophysical Logs

PACIFIC SURVEYS

CALIPER BOREHOLE VOLUME

Job No.	18717
File No.	
Company	NATIONAL EWP
Well	PW-01
Field	BAKER
County	SAN BERNARDINO
State	CA

Location:
NW OF ZZYZX RD & ARROWHEAD TRAIL
GPS: N35o 12.494' W116o 09.766'

Other Services:
ELOG/GR
SONIC/VDL

Sec. | Twp. | Rge.

				Elevation
Permanent Datum	G.L.	Elevation		K.B.
Log Measured From	G.L.	0'	above perm. datum	D.F.
Drilling Measured From	G.L.			G.L.

Date	8-28-2014		
Run Number	ONE		
Depth Driller	540'		
Depth Logger	540'		
Bottom Logged Interval	540'		
Top Log Interval	0'		
Casing Driller	13.5" TO 20'		
Casing Logger	20'		
Bit Size	12.25"		
Type Fluid in Hole	BENTONITE		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Meas. Temp	6.4 @ 92.8F		
Rmf @ Meas. Temp	6.2 @ 92.8F		
Rmc @ Meas. Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Circulation Stopped	10:00		
Time Logger on Bottom	11:00		
Max. Recorded Temperature	N/A		
Equipment Number	PS-5		
Location	LA		
Recorded By	WATKINS		
Witnessed By	S. BARBAR		

<<< Fold Here >>>

Comments

Calibration Report

Database File	18717.db
Dataset Pathname	CAL/CAL
Dataset Creation	Thu Aug 28 12:17:47 2014

Temperature Calibration Report

Serial Number:	GRPH_SHORT		
Tool Model:	GRPH_CAL		
Performed:	Tue Jan 21 14:11:28 2014		
	Reference		Reading
Low Reference:	4.00	degF	2417.00cps
High Reference:	8.00	degF	5700.00cps
Gain:	0.00		
Offset:	1.06		
Delta Spacing	1		

XY Caliper Calibration Report

Serial Number/Model: Short-Comprobe
Performed: Sat Aug 09 16:17:59 2014

Ring			X Caliper		Y Caliper	
1:	4	in	1000.32	cps	1000.32	cps
2:	6	in	1609.48	cps	1609.48	cps
3:	8	in	2417.53	cps	2417.53	cps
4:	10	in	3266.45	cps	3266.46	cps
5:	16	in	5700	cps	5700	cps
6:	24	in	9014.71	cps	9014.71	cps
7:		in		cps		cps
8:		in		cps		cps
9:		in		cps		cps
10:		in		cps		cps

Database File	18717.db
Dataset Pathname	CAL/CAL
Presentation Format	xyc_gph
Dataset Creation	Thu Aug 28 12:17:47 2014
Charted by	Depth in Feet scaled 1:240

CSG SCHEDULE

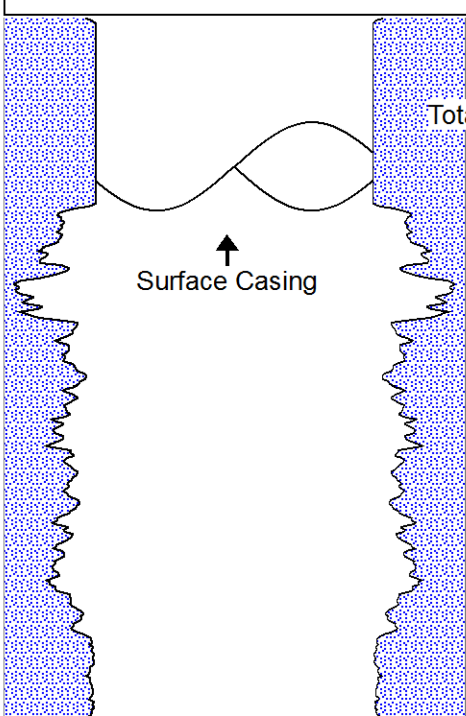
Pipe(s) proportional to Hole Size

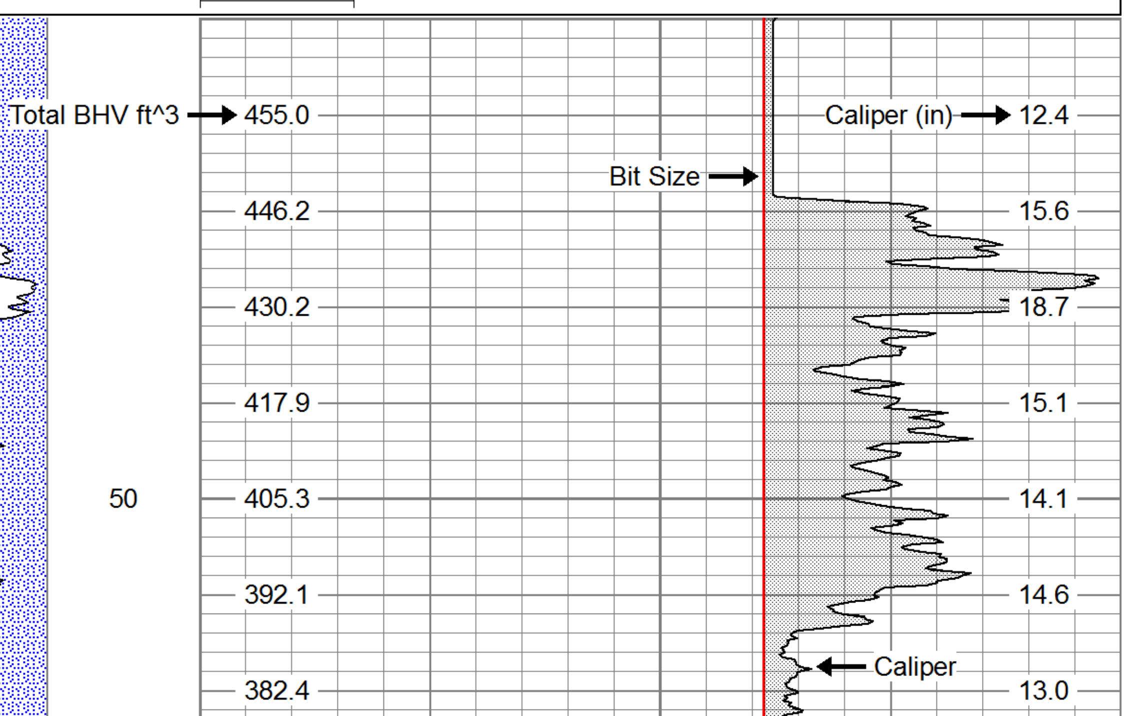
0 Caliper (in) 20

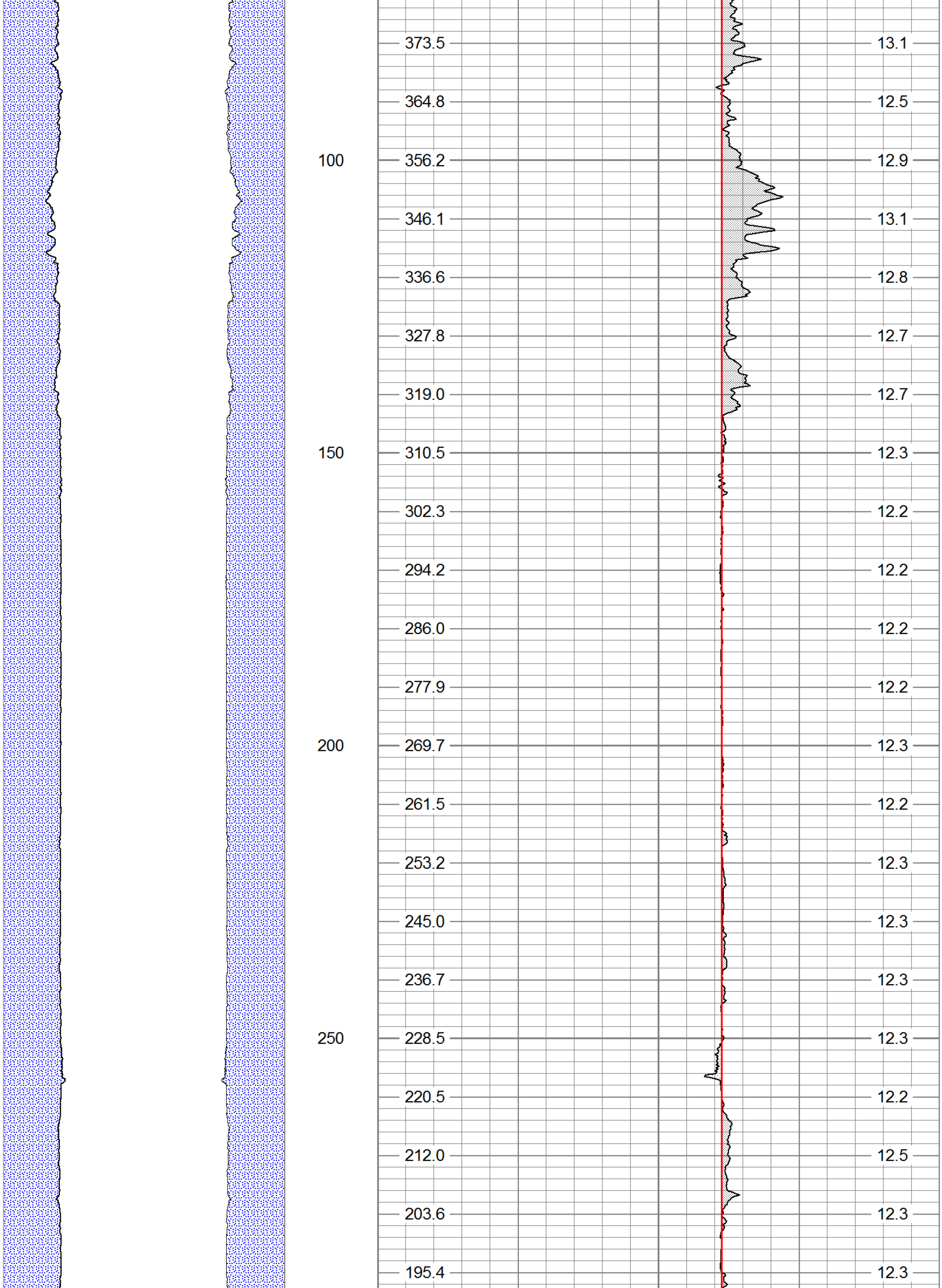
0 Bit Size (in) 20

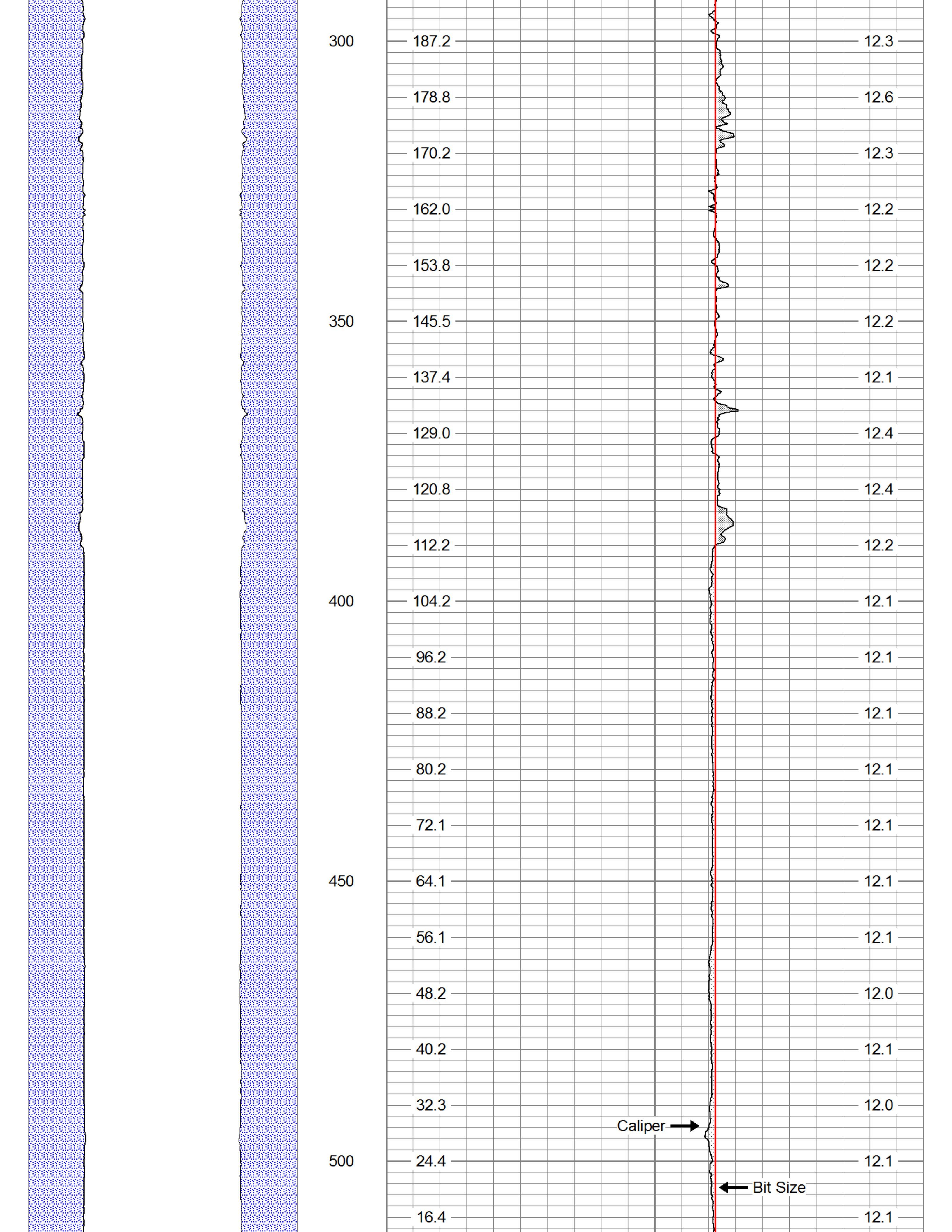
Total BHV ft^3 (ft3)

Caliper (in)

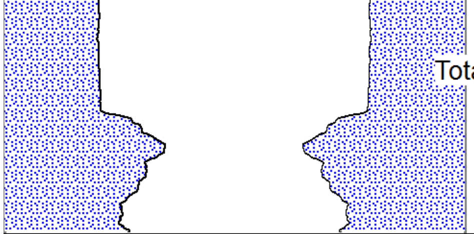


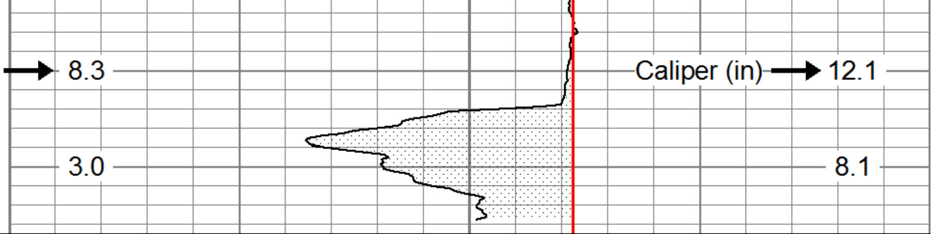



373.5
13.1
364.8
12.5
100
356.2
12.9
346.1
13.1
336.6
12.8
327.8
12.7
319.0
12.7
150
310.5
12.3
302.3
12.2
294.2
12.2
286.0
12.2
277.9
12.2
200
269.7
12.3
261.5
12.2
253.2
12.3
245.0
12.3
236.7
12.3
250
228.5
12.3
220.5
12.2
212.0
12.5
203.6
12.3
195.4
12.3



300
187.2
12.3
178.8
12.6
170.2
12.3
162.0
12.2
153.8
12.2
350
145.5
12.2
137.4
12.1
129.0
12.4
120.8
12.4
112.2
12.2
400
104.2
12.1
96.2
12.1
88.2
12.1
80.2
12.1
72.1
12.1
450
64.1
12.1
56.1
12.1
48.2
12.0
40.2
12.1
32.3
12.0
Caliper
500
24.4
12.1
Bit Size
16.4
12.1





CSG SCHEDULE Pipe(s) proportional to Hole Size			
	0	Caliper (in)	20
	0	Bit Size (in)	20
	Total BHV ft^3 (ft3)		Caliper (in)

PACIFIC SURVEYS

ELECTRIC LOG
GAMMA-RAY

Job No. 18717

File No.

Company	NATIONAL EWP
Well	PW-01
Field	BAKER
County	SAN BERNARDINO State CA

Location:
NW OF ZZYZX RD & ARROWHEAD TRAIL
GPS: N35o 12.494' W116o 09.766'

Other Services:
SONIC/VDL
CALIPER

Sec. Twp. Rge.

Permanent Datum	G.L.		Elevation	Elevation K.B.
Log Measured From	G.L.	0'	above perm. datum	D.F.
Drilling Measured From	G.L.			G.L.

Date	8-28-2014		
Run Number	ONE		
Depth Driller	540'		
Depth Logger	540'		
Bottom Logged Interval	540'		
Top Log Interval	0'		
Casing Driller	13.5" TO 20'		
Casing Logger	20'		
Bit Size	12.25"		
Type Fluid in Hole	BENTONITE		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Meas. Temp	6.4 @ 92.8F		
Rmf @ Meas. Temp	6.2 @ 92.8F		
Rmc @ Meas. Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Circulation Stopped	10:00		
Time Logger on Bottom	11:00		
Max. Recorded Temperature	N/A		
Equipment Number	PS-5		
Location	LA		
Recorded By	WATKINS		
Witnessed By	S. BARBAR		

<<< Fold Here >>>

Comments

Calibration Report

Database File	18717.db
Dataset Pathname	elog.1
Dataset Creation	Thu Aug 28 11:37:31 2014

ELOG Calibration Report

Serial:	D4
Model:	DTQ
Shop Calibration Performed:	Thu May 22 10:37:59 2014
Before Survey Verification Performed:	Sat Sep 14 11:11:53 2013
After Survey Verification Performed:	Sat Sep 14 11:11:58 2013

Shop Calibration

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	9.446	101.290		10.200	102.200	Ohm-m	1.002	0.738
Long	9.440	98.766		10.200	102.200	Ohm-m	1.030	-17.000
IEE			counts			A		
VSN			counts			V		
VLN			counts			V		

Before Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	178.827	100.801		295.888	100.783	Ohm-m	2.501	-151.272
Long	934.011	103.172		103.094	103.094	Ohm-m	0.483	53.212
IEE			counts			A		
VSN			counts			V		
VLN			counts			V		

After Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	40.270	101.200		40.249	101.201	Ohm-m	1.000	-0.035
Long	142.491	102.843		102.842	102.842	Ohm-m	1.004	-0.383
IEE			counts			A		
VSN			counts			V		
VLN			counts			V		

After Survey Verification compared to Before Survey Calibration

	Zero			Cal		
	Before	After		Before	After	
Short	295.888	40.249	Ohm-m	100.783	101.201	Ohm-m
Long	504.790	142.638	Ohm-m	103.094	102.842	Ohm-m

Gamma Ray Calibration Report

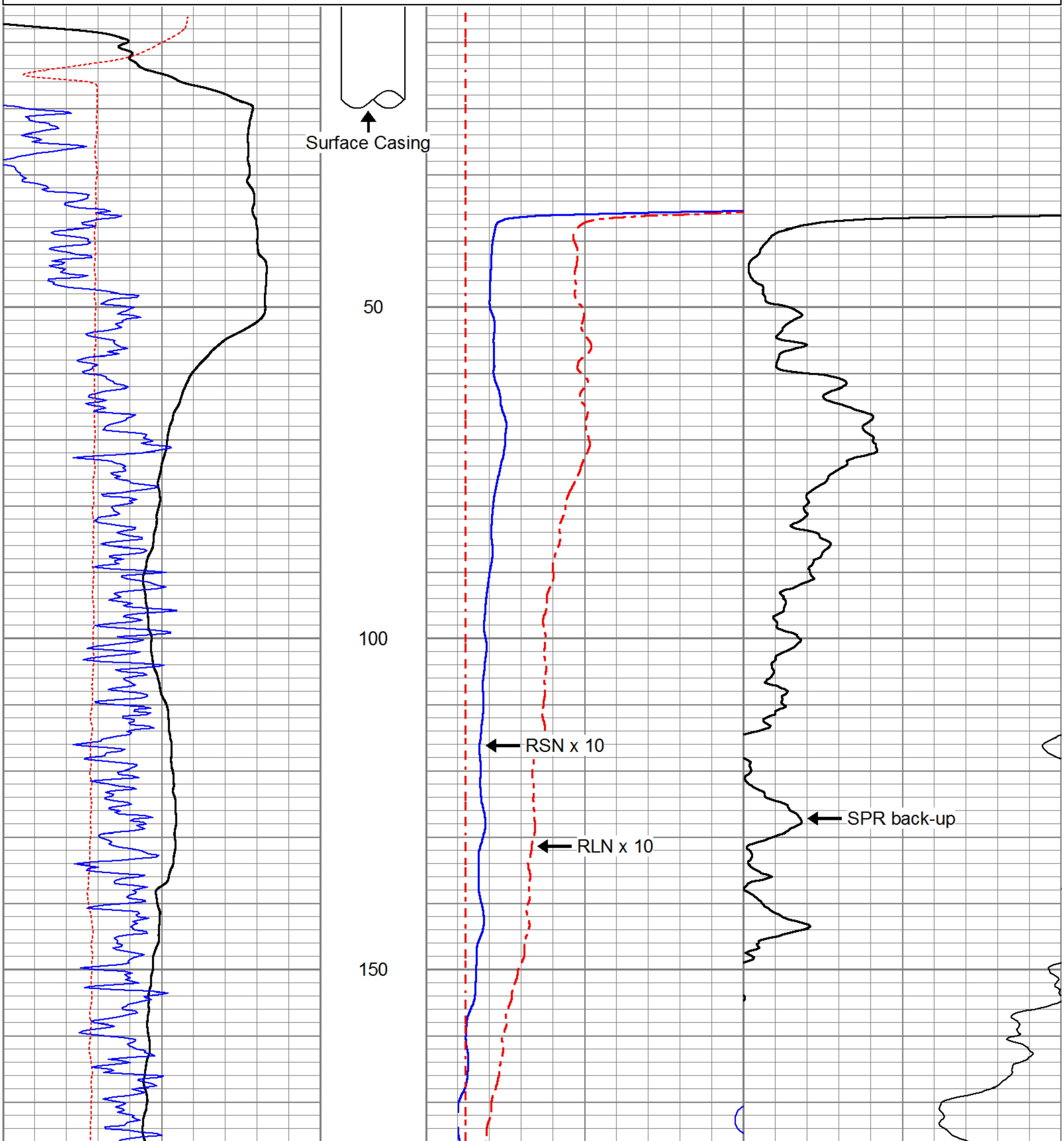
Serial Number:	D4	
Tool Model:	ELOG	
Performed:	Tue Jun 10 10:58:27 2014	
Calibrator Value:	162.0	GAPI
Background Reading:	111.8	cps
Calibrator Reading:	338.8	cps
Sensitivity:	0.7136	GAPI/cps

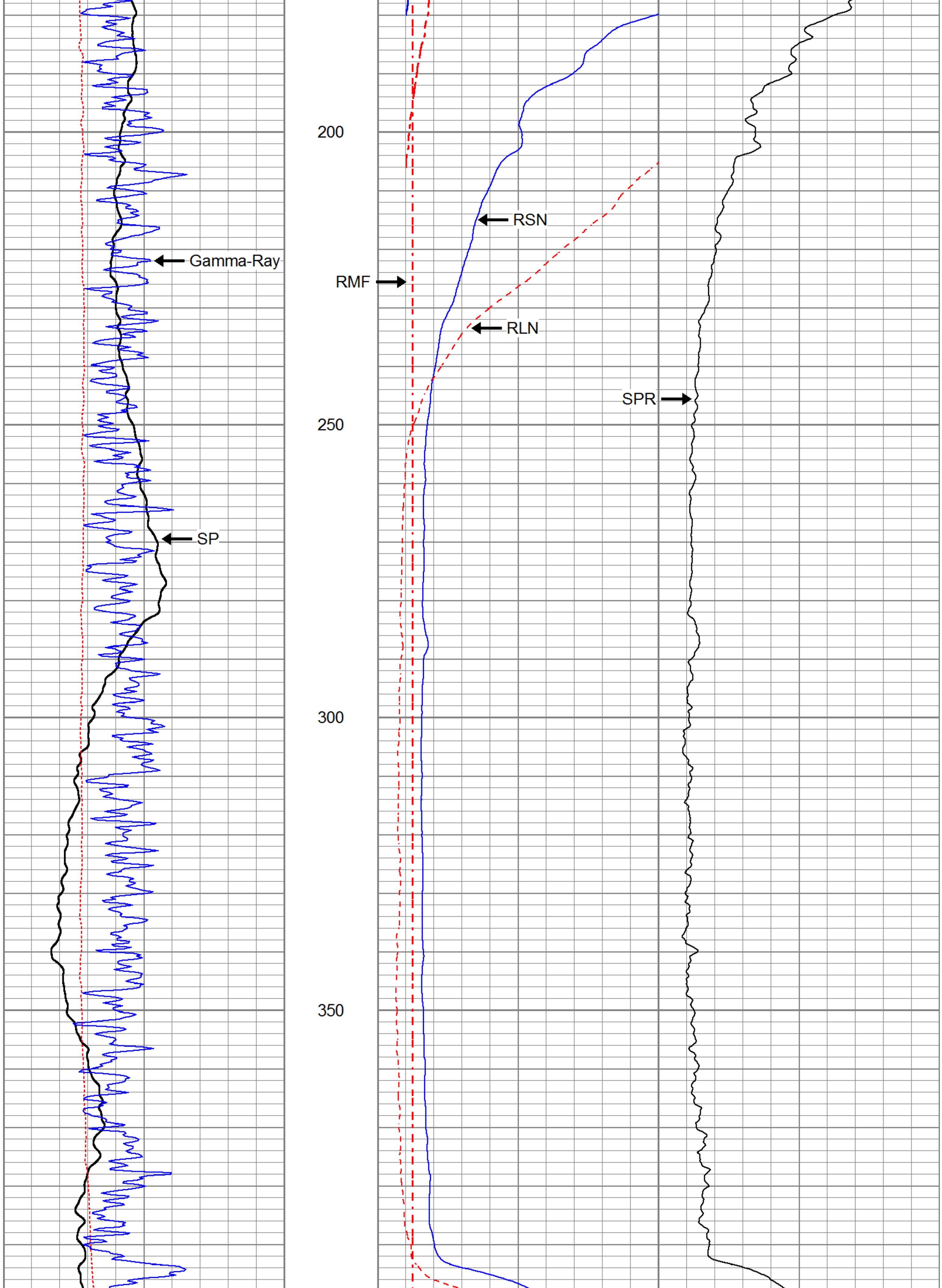
Database File	18717.db
Dataset Pathname	elog.1
Presentation Format	elog
Dataset Creation	Thu Aug 28 11:37:31 2014
Charted by	Depth in Feet scaled 1:240

-150	SP (mV)	50
0	Line Speed (ft/min)	100
100	Gamma-Ray (GAPI)	200

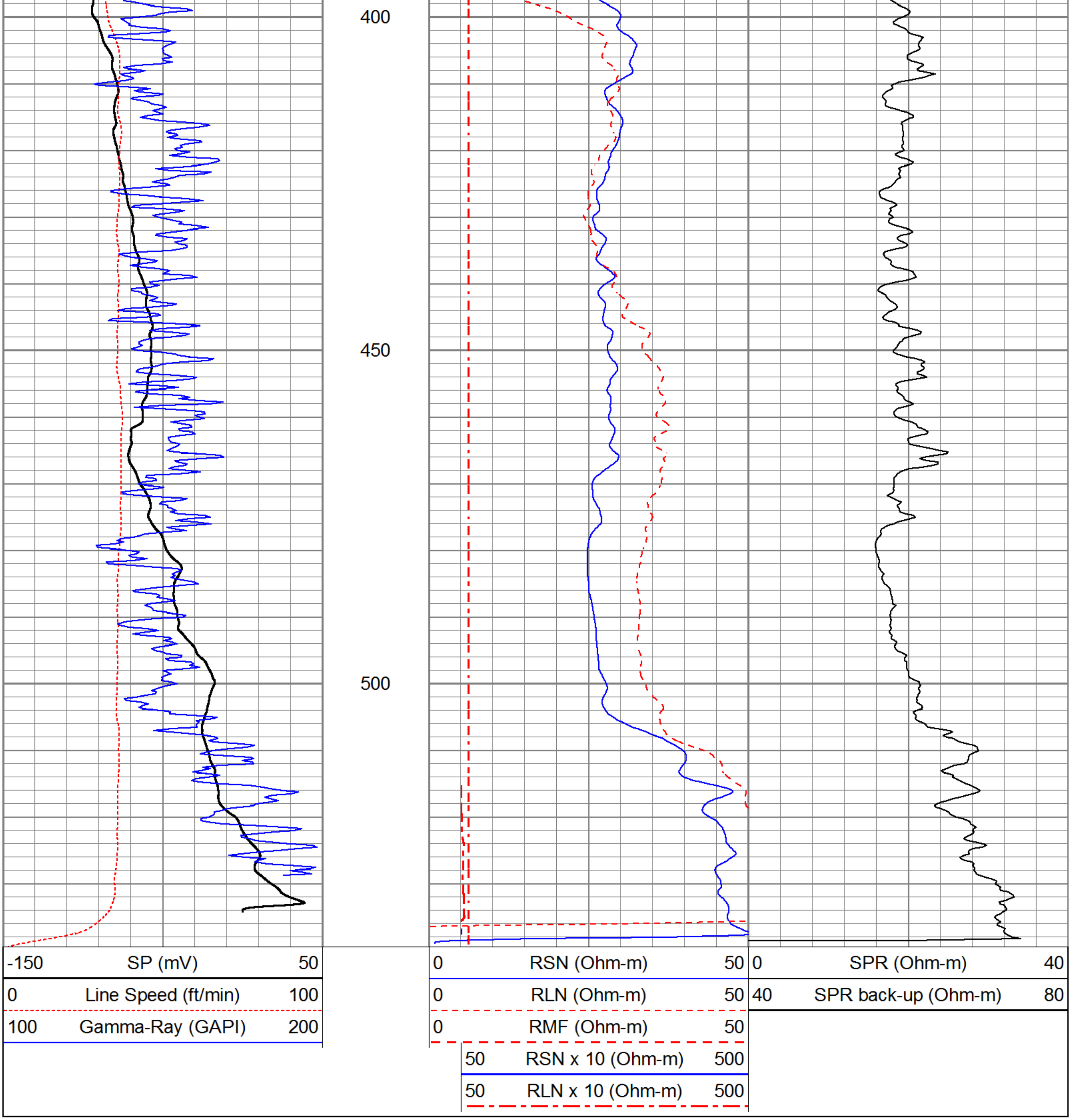
0	RSN (Ohm-m)	50
0	RLN (Ohm-m)	50
0	RMF (Ohm-m)	50
50	RSN x 10 (Ohm-m)	500
50	RLN x 10 (Ohm-m)	500

0	SPR (Ohm-m)	40
40	SPR back-up (Ohm-m)	80





Gamma-Ray
SP
200
250
300
350
RMF
RSN
RLN
SPR



400
450
500
-150 SP (mV) 50
0 Line Speed (ft/min) 100
100 Gamma-Ray (GAPI) 200
0 RSN (Ohm-m) 50
0 RLN (Ohm-m) 50
0 RMF (Ohm-m) 50
50 RSN x 10 (Ohm-m) 500
50 RLN x 10 (Ohm-m) 500
0 SPR (Ohm-m) 40
40 SPR back-up (Ohm-m) 80

PACIFIC SURVEYS

SONIC VELOCITY
VARIABLE DENSITY

Job No.		
18717	Company	NATIONAL EWP
	Well	PW-01
	Field	BAKER
File No.	County	SAN BERNARDINO State CA

Location:

NW OF ZZYZX RD & ARROWHEAD TRAIL
GPS: N35o 12.494' W116o 09.766'

Sec. Twp. Rge.

Other Services:

ELOG/GR
CALIPER

				Elevation
Permanent Datum	G.L.		Elevation	K.B.
Log Measured From	G.L.	0'	above perm. datum	D.F.
Drilling Measured From	G.L.			G.L.

Date	8-28-2014		
Run Number	ONE		
Depth Driller	540'		
Depth Logger	540'		
Bottom Logged Interval	540'		
Top Log Interval	0'		
Casing Driller	13.5" TO 20'		
Casing Logger	20'		
Bit Size	12.25"		
Type Fluid in Hole	BENTONITE		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Meas. Temp	6.4 @ 92.8F		
Rmf @ Meas. Temp	6.2 @ 92.8F		
Rmc @ Meas. Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Circulation Stopped	10:00		
Time Logger on Bottom	11:00		
Max. Recorded Temperature	N/A		
Equipment Number	PS-5		
Location	LA		
Recorded By	WATKINS		
Witnessed By	S. BARBAR		

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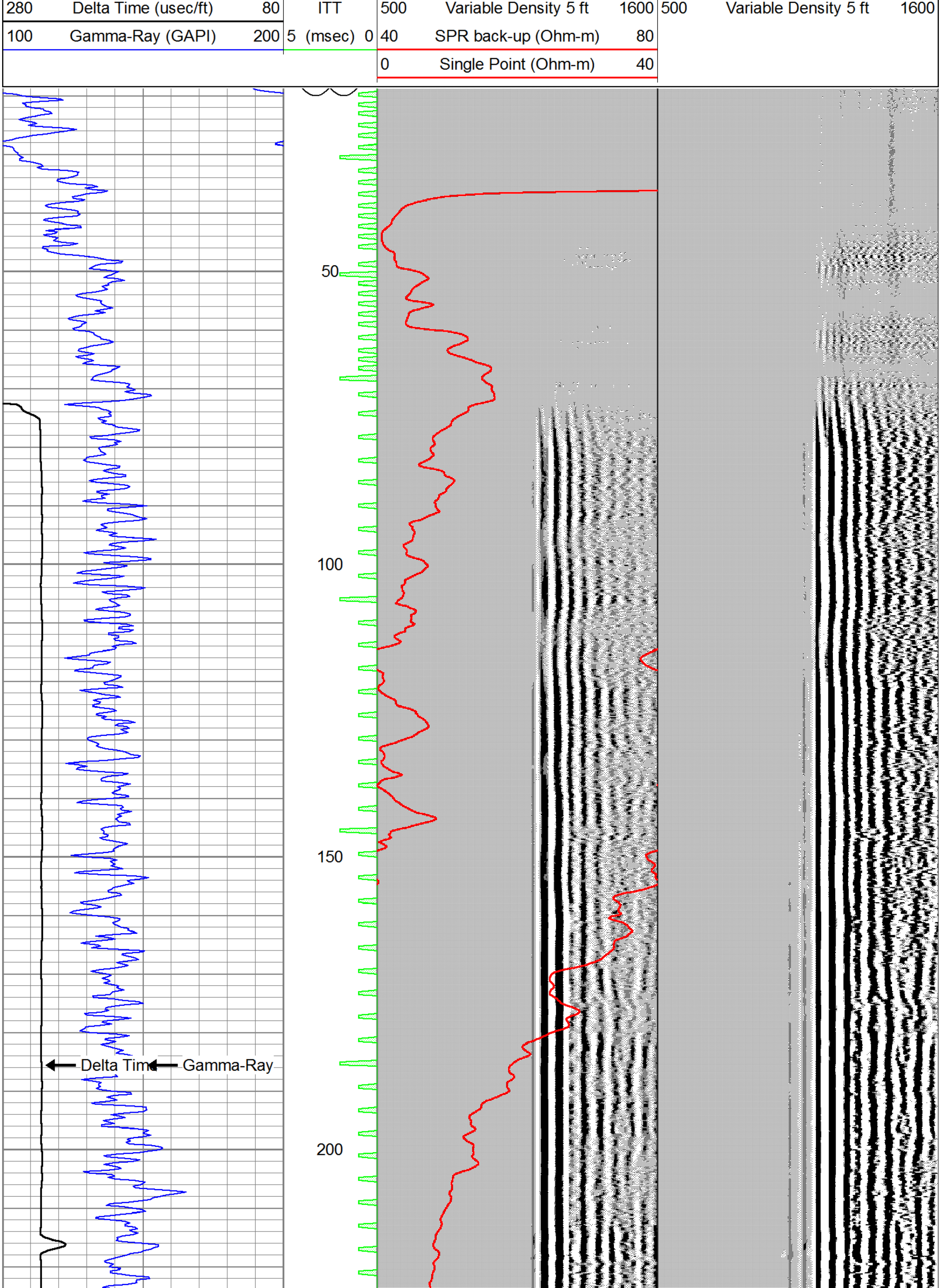
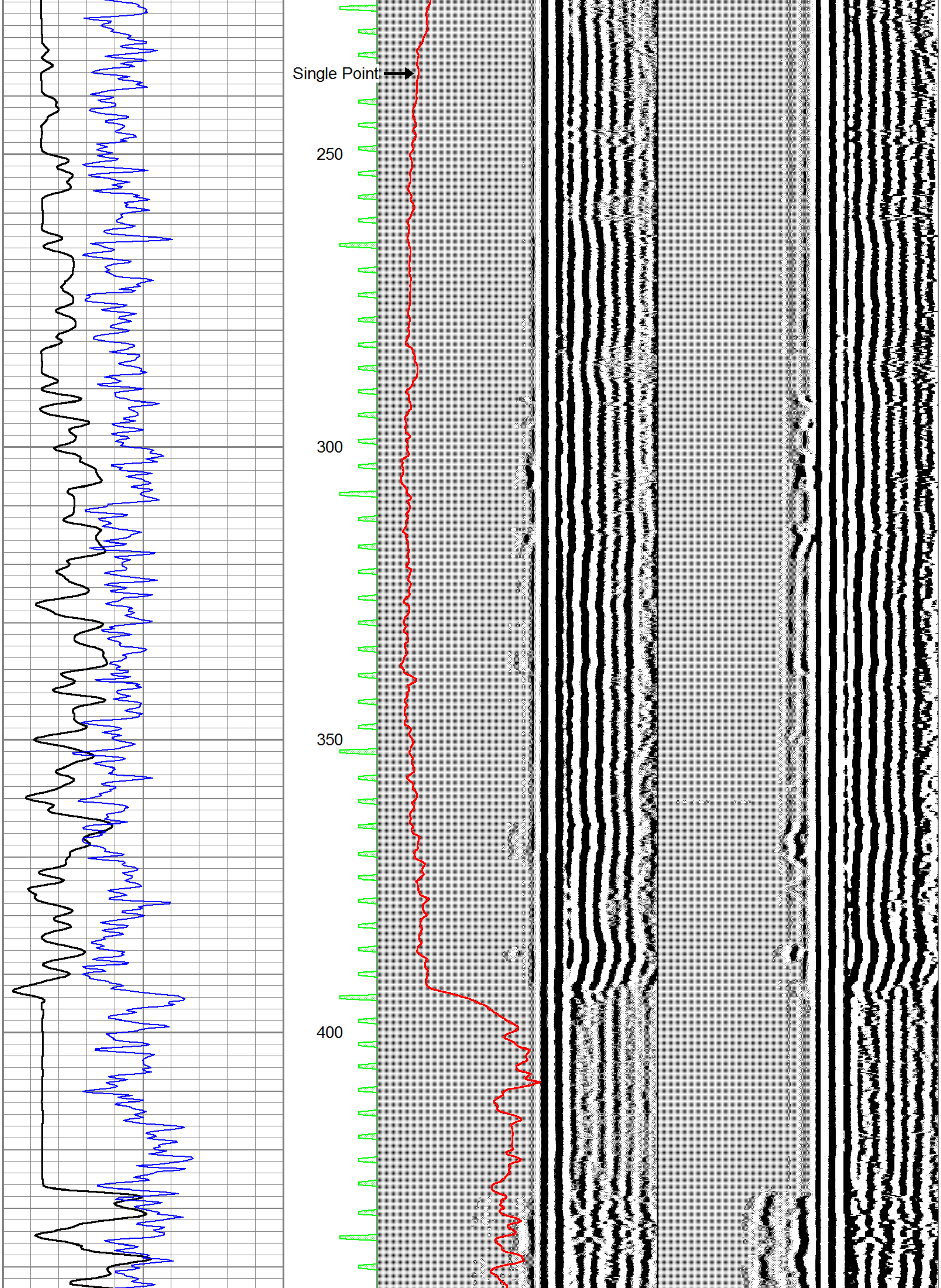
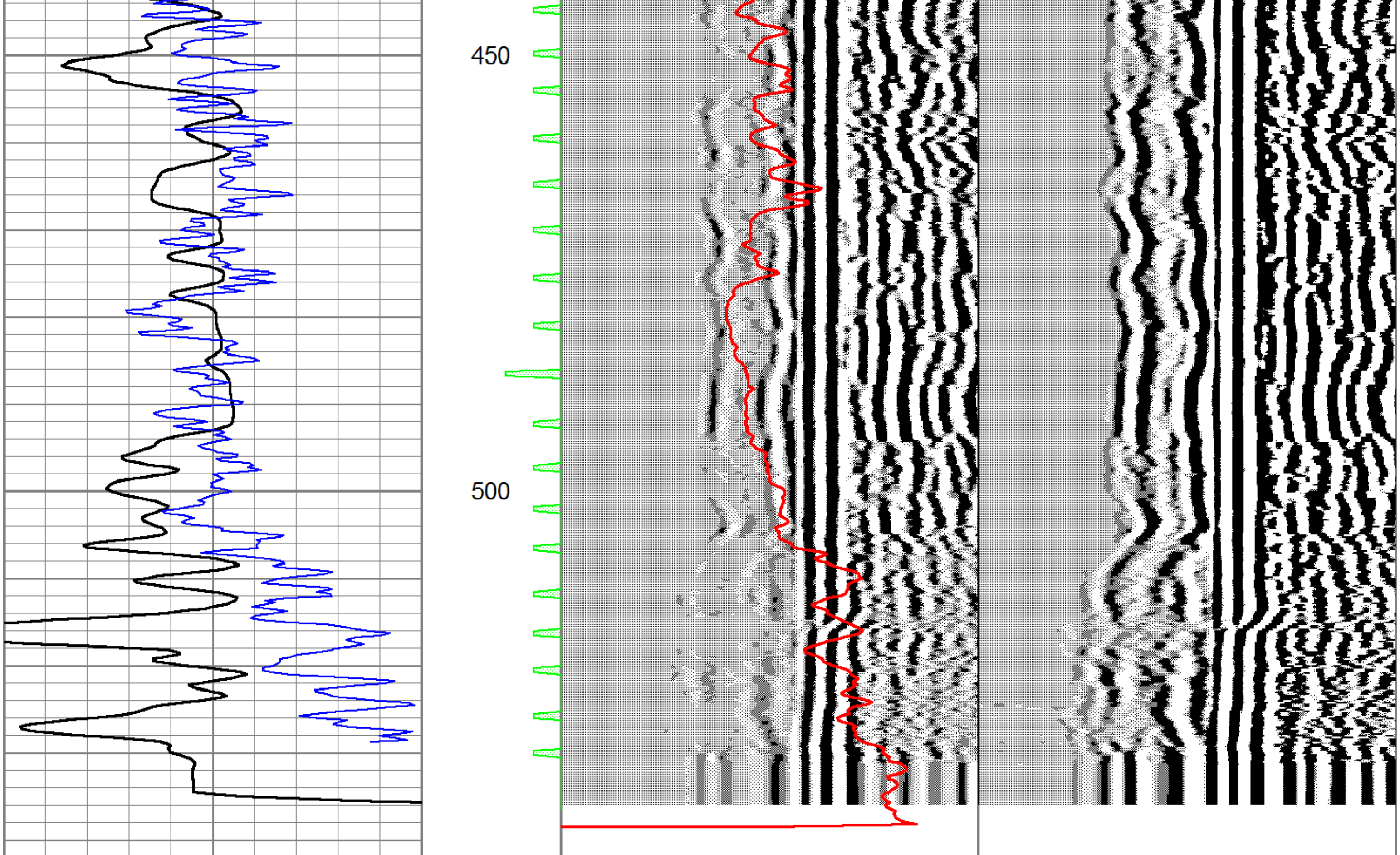
Comments

Database File	18717.db
Dataset Pathname	SNC
Presentation Format	slt
Dataset Creation	Thu Aug 28 11:35:41 2014
Charted by	Depth in Feet scaled 1:240


280 Delta Time (usec/ft) 80
100 Gamma-Ray (GAPI) 200
ITT
5 (msec) 0
500 Variable Density 5 ft 1600
40 SPR back-up (Ohm-m) 80
0 Single Point (Ohm-m) 40
500 Variable Density 5 ft 1600
50
100
150
200
Delta Time
Gamma-Ray


Single Point
250
300
350
400



280 Delta Time (usec/ft) 80	ITT	500 Variable Density 5 ft 1600	500 Variable Density 5 ft 1600
100 Gamma-Ray (GAPI) 200	5 (msec) 0	40 SPR back-up (Ohm-m) 80	
		0 Single Point (Ohm-m) 40	

PACIFIC SURVEYS

CALIPER BOREHOLE VOLUME

Job No.	18736
File No.	
Company	NATIONAL EWP
Well	OW-01
Field	BAKER
County	SAN BERNARDINO
State	CA

Location:
NW OF ZZYZX RD & ARROWHEAD TRAIL
GPS: N35o 12.504' W116o 09.755'

Other Services:
ELOG/GR
SONIC/VDL

Sec. Twp. Rge.

Permanent Datum	G.L.		Elevation	Elevation
Log Measured From	G.L.	0'	above perm. datum	K.B.
Drilling Measured From	G.L.			D.F.
				G.L.

Date	9-6-2014		
Run Number	ONE		
Depth Driller	555'		
Depth Logger	555'		
Bottom Logged Interval	555'		
Top Log Interval	0'		
Casing Driller	9 7/8" TO 180'		
Casing Logger	179'		
Bit Size	8.5"		
Type Fluid in Hole	BENTONITE		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Meas. Temp	5.05 @ 95.5F		
Rmf @ Meas. Temp	4.79 @ 95.5F		
Rmc @ Meas. Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Circulation Stopped	11:00		
Time Logger on Bottom	12:30		
Max. Recorded Temperature	N/A		
Equipment Number	PS-5		
Location	LA		
Recorded By	WATKINS		
Witnessed By	S. BARBER		

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Comments

Calibration Report

Database File	18736.db
Dataset Pathname	CAL/CAL
Dataset Creation	Sat Sep 06 13:51:53 2014

Temperature Calibration Report

Serial Number:	GRPH_SHORT		
Tool Model:	GRPH_CAL		
Performed:	Tue Jan 21 14:11:28 2014		
	Reference		Reading
Low Reference:	4.00	degF	2417.00cps
High Reference:	8.00	degF	5700.00cps
Gain:	0.00		
Offset:	1.06		
Delta Spacing	1		

XY Caliper Calibration Report

Serial Number/Model: Short-Comprobe
Performed: Sat Aug 09 16:17:59 2014

Ring			X Caliper		Y Caliper	
1:	4	in	1000.32	cps	1000.32	cps
2:	6	in	1609.48	cps	1609.48	cps
3:	8	in	2417.53	cps	2417.53	cps
4:	10	in	3266.45	cps	3266.46	cps
5:	16	in	5700	cps	5700	cps
6:	24	in	9014.71	cps	9014.71	cps
7:		in		cps		cps
8:		in		cps		cps
9:		in		cps		cps
10:		in		cps		cps

Database File	18736.db
Dataset Pathname	CAL/CAL
Presentation Format	xyc_gph
Dataset Creation	Sat Sep 06 13:51:53 2014
Charted by	Depth in Feet scaled 1:240

CSG SCHEDULE

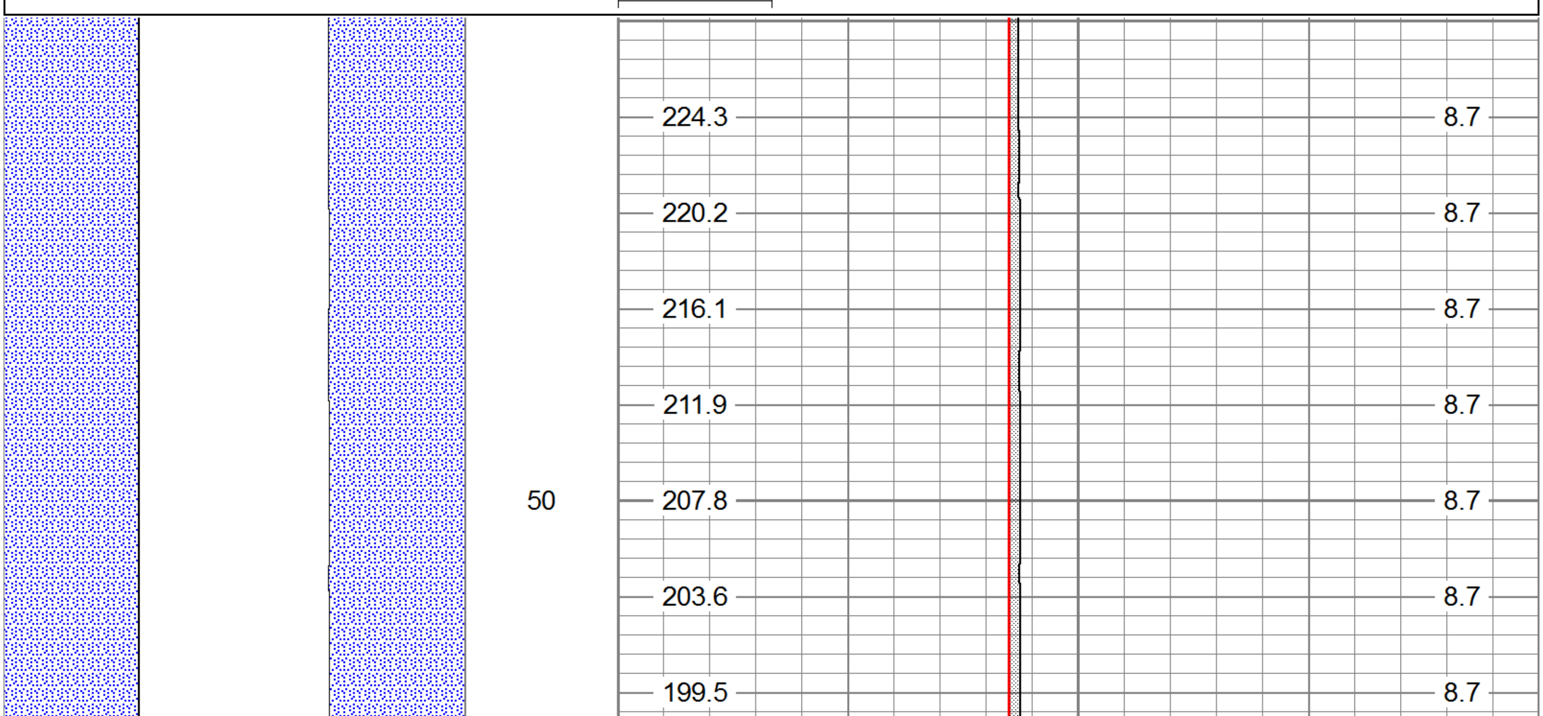
Pipe(s) proportional to Hole Size

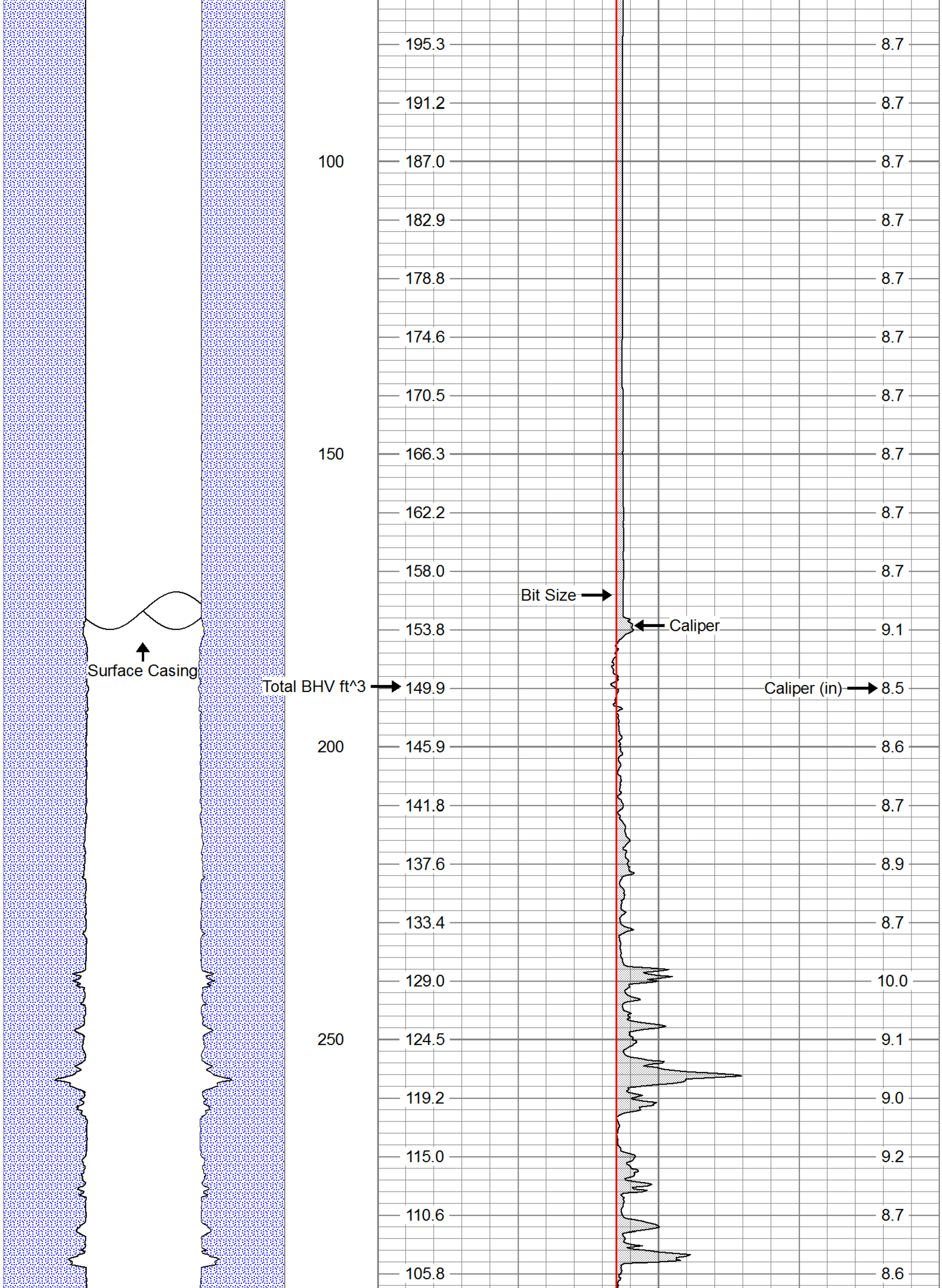
0 Caliper (in) 20

0 Bit Size (in) 20

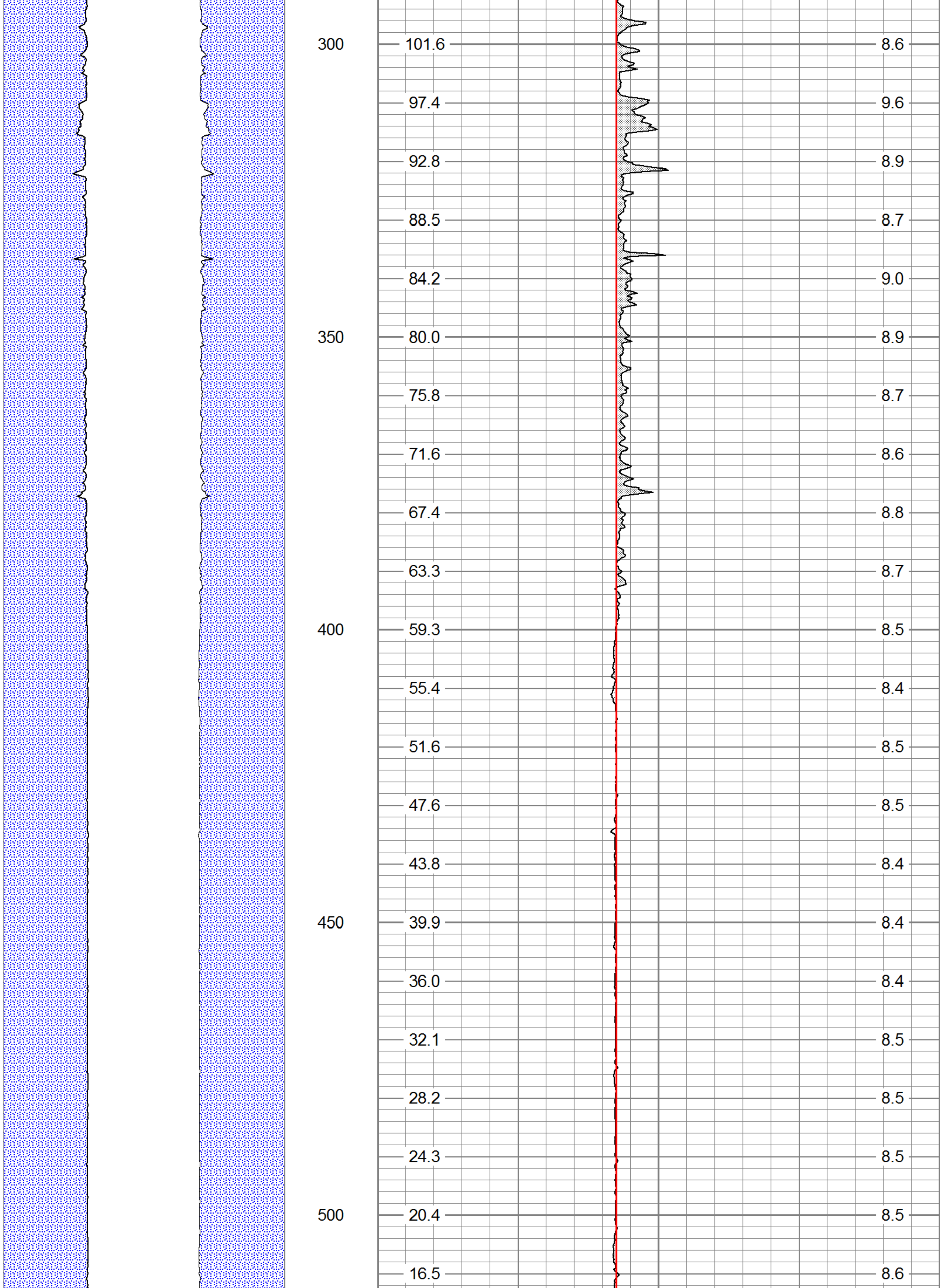
Total BHV ft^3 (ft3)

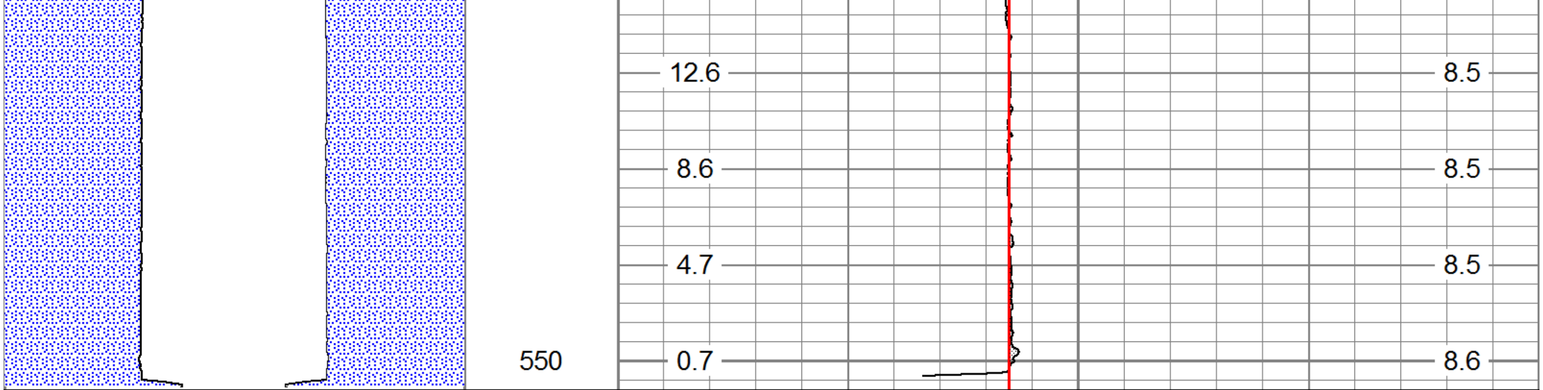
Caliper (in)





195.3
8.7
191.2
8.7
100
187.0
8.7
182.9
8.7
178.8
8.7
174.6
8.7
170.5
8.7
150
166.3
8.7
162.2
8.7
158.0
8.7
Bit Size
Caliper
153.8
9.1
Surface Casing
Total BHV ft^3
149.9
Caliper (in)
8.5
200
145.9
8.6
141.8
8.7
137.6
8.9
133.4
8.7
129.0
10.0
250
124.5
9.1
119.2
9.0
115.0
9.2
110.6
8.7
105.8
8.6


300
350
400
450
500
101.6
97.4
92.8
88.5
84.2
80.0
75.8
71.6
67.4
63.3
59.3
55.4
51.6
47.6
43.8
39.9
36.0
32.1
28.2
24.3
20.4
16.5
8.6
9.6
8.9
8.7
9.0
8.9
8.7
8.6
8.8
8.7
8.5
8.4
8.5
8.5
8.4
8.4
8.4
8.5
8.5
8.5
8.5
8.6



CSG SCHEDULE		0 Caliper (in) 20
Pipe(s) proportional to Hole Size		0 Bit Size (in) 20
		Total BHV ft^3 (ft3) / Caliper (in)

PACIFIC SURVEYS

ELECTRIC LOG
GAMMA-RAY

Job No. 18736	Company	NATIONAL EWP
	Well	OW-01
File No.	Field	BAKER
	County	SAN BERNARDINO State CA

Location:

NW OF ZZYZX RD & ARROWHEAD TRAIL
GPS: N35o 12.504' W116o 09.755'

Sec. Twp. Rge.

Other Services:

SONIC/VDL
CALIPER

Permanent Datum	G.L.		Elevation	Elevation
Log Measured From	G.L.	0'	above perm. datum	K.B.
Drilling Measured From	G.L.			D.F.
				G.L.

Date	9-6-2014		
Run Number	ONE		
Depth Driller	555'		
Depth Logger	555'		
Bottom Logged Interval	555'		
Top Log Interval	0'		
Casing Driller	9 7/8" TO 180'		
Casing Logger	179'		
Bit Size	8.5"		
Type Fluid in Hole	BENTONITE		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Meas. Temp	5.05 @ 95.5F		
Rmf @ Meas. Temp	4.79 @ 95.5F		
Rmc @ Meas. Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Circulation Stopped	11:00		
Time Logger on Bottom	12:30		
Max. Recorded Temperature	N/A		
Equipment Number	PS-5		
Location	LA		
Recorded By	WATKINS		
Witnessed By	S. BARBER		

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Comments

Calibration Report

Database File	18736.db
Dataset Pathname	elog.1
Dataset Creation	Sat Sep 06 13:14:33 2014

ELOG Calibration Report

Serial:	D4
Model:	DTQ
Shop Calibration Performed:	Thu May 22 10:37:59 2014
Before Survey Verification Performed:	Sat Sep 14 11:11:53 2013
After Survey Verification Performed:	Sat Sep 14 11:11:58 2013

Shop Calibration

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	9.446	101.290		10.200	102.200	Ohm-m	1.002	0.738
Long	9.440	98.766		10.200	102.200	Ohm-m	1.030	-17.000
IEE	29469.859	29471.061	counts	32.252	32.253	A		
VSN	1824.000	1824.020	counts	34.791	34.791	V		
VLN	8175.680	8176.080	counts	155.941	155.949	V		

Before Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	178.827	100.801		295.888	100.783	Ohm-m	2.501	-151.272
Long	934.011	103.172		103.094	103.094	Ohm-m	0.483	53.212
IEE	74.460	6115.720	counts	0.081	6.693	A		
VSN	149.600	6926.100	counts	2.853	132.107	V		
VLN	195.340	1772.260	counts	3.726	33.804	V		

After Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	40.270	101.200		40.249	101.201	Ohm-m	1.000	-0.035
Long	142.491	102.843		102.842	102.842	Ohm-m	1.004	-0.383
IEE	213.380	7077.580	counts	0.234	7.746	A		
VSN	96.540	8047.160	counts	1.841	153.490	V		
VLN	85.400	2044.440	counts	1.629	38.995	V		

After Survey Verification compared to Before Survey Calibration

	Zero			Cal		
	Before	After		Before	After	
Short	295.888	40.249	Ohm-m	100.783	101.201	Ohm-m
Long	504.790	142.638	Ohm-m	103.094	102.842	Ohm-m

Gamma Ray Calibration Report

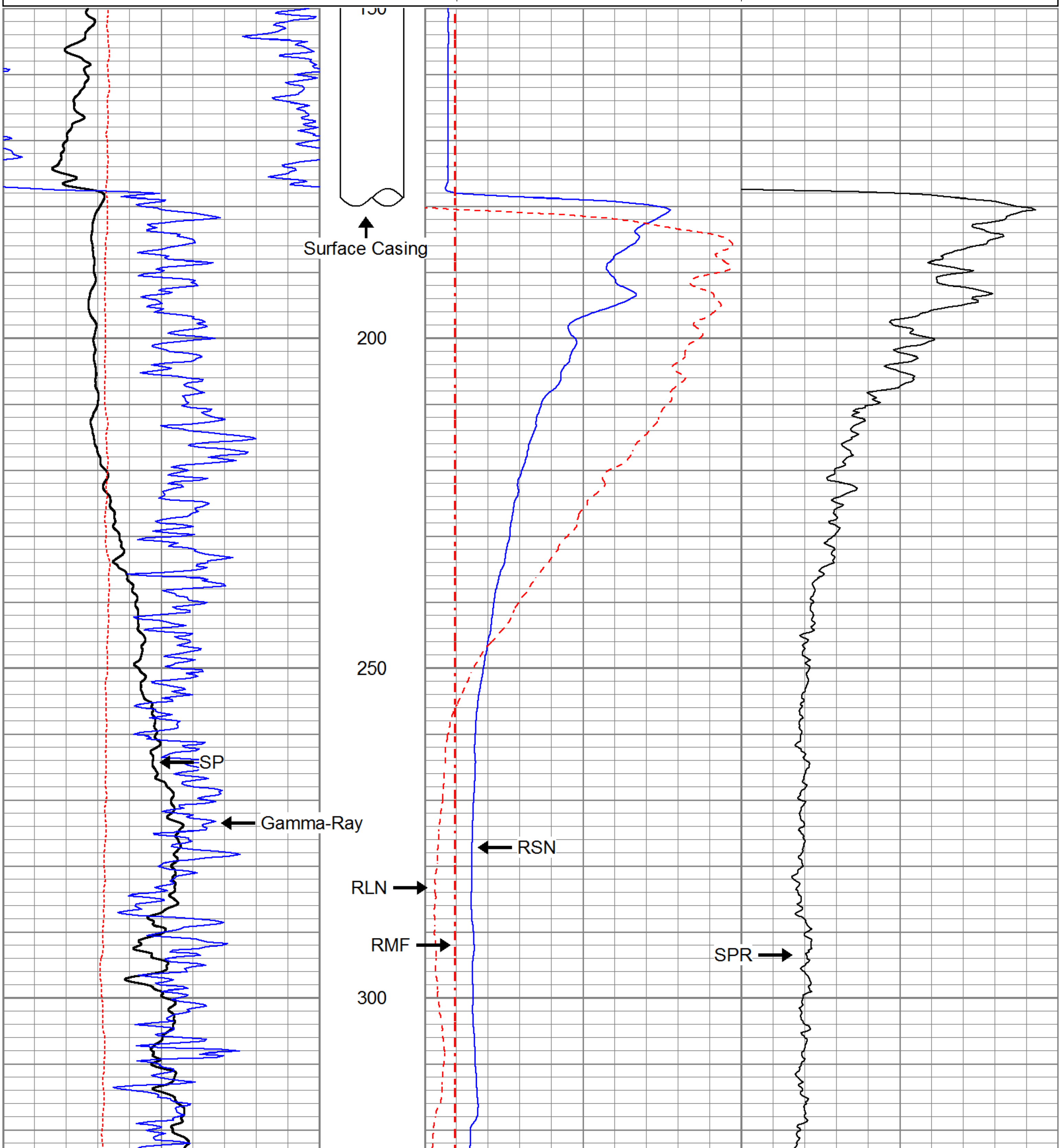
Serial Number:	D4	
Tool Model:	ELOG	
Performed:	Tue Jun 10 10:58:27 2014	
Calibrator Value:	162.0	GAPI
Background Reading:	111.8	cps
Calibrator Reading:	338.8	cps
Sensitivity:	0.7136	GAPI/cps

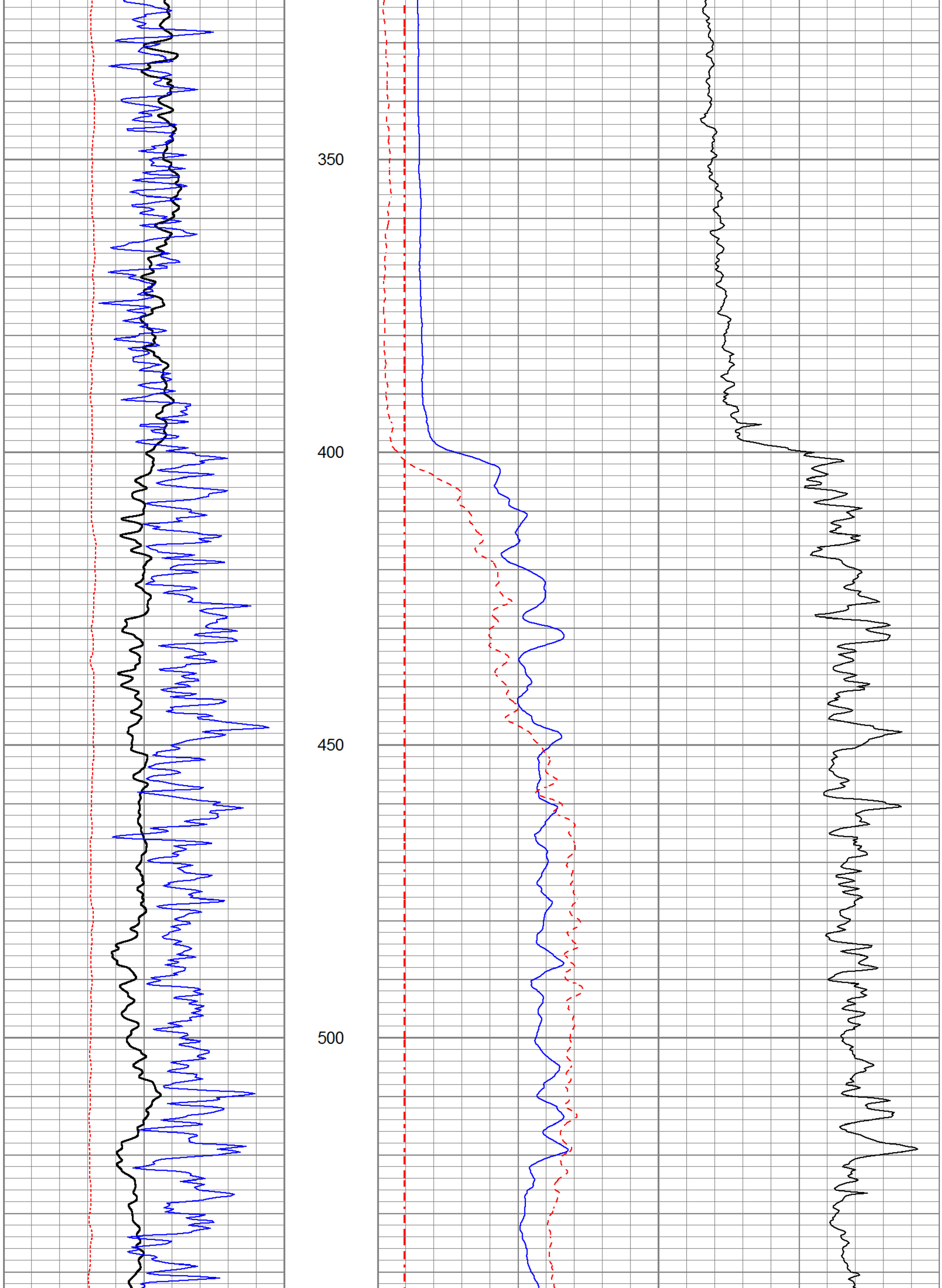
Database File	18736.db
Dataset Pathname	elog.1
Presentation Format	elog
Dataset Creation	Sat Sep 06 13:14:33 2014
Charted by	Depth in Feet scaled 1:240

0	SP (mV)	200
0	Line Speed (ft/min)	100
100	Gamma-Ray (GAPI)	200

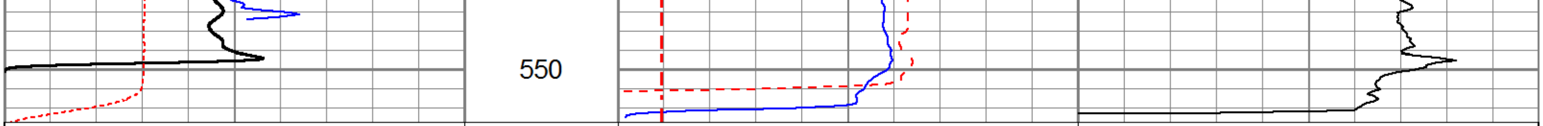
0	RSN (Ohm-m)	50
0	RLN (Ohm-m)	50
0	RMF (Ohm-m)	50
50	RSN x 10 (Ohm-m)	500
50	RLN x 10 (Ohm-m)	500

0	SPR (Ohm-m)	40





350
400
450
500



0	SP (mV)	200	0	RSN (Ohm-m)	50	0	SPR (Ohm-m)	40
0	Line Speed (ft/min)	100	0	RLN (Ohm-m)	50			
100	Gamma-Ray (GAPI)	200	0	RMF (Ohm-m)	50			
			50	RSN x 10 (Ohm-m)	500			
			50	RLN x 10 (Ohm-m)	500			

PACIFIC SURVEYS

SONIC VELOCITY
VARIABLE DENSITY

Job No. 18736	Company	NATIONAL EWP
	Well	OW-01
File No.	Field	BAKER
	County	SAN BERNARDINO State CA

Location:

NW OF ZZYZX RD & ARROWHEAD TRAIL
GPS: N35o 12.504' W116o 09.755'

Sec. Twp. Rge.

Other Services:

ELOG/GR
CALIPER

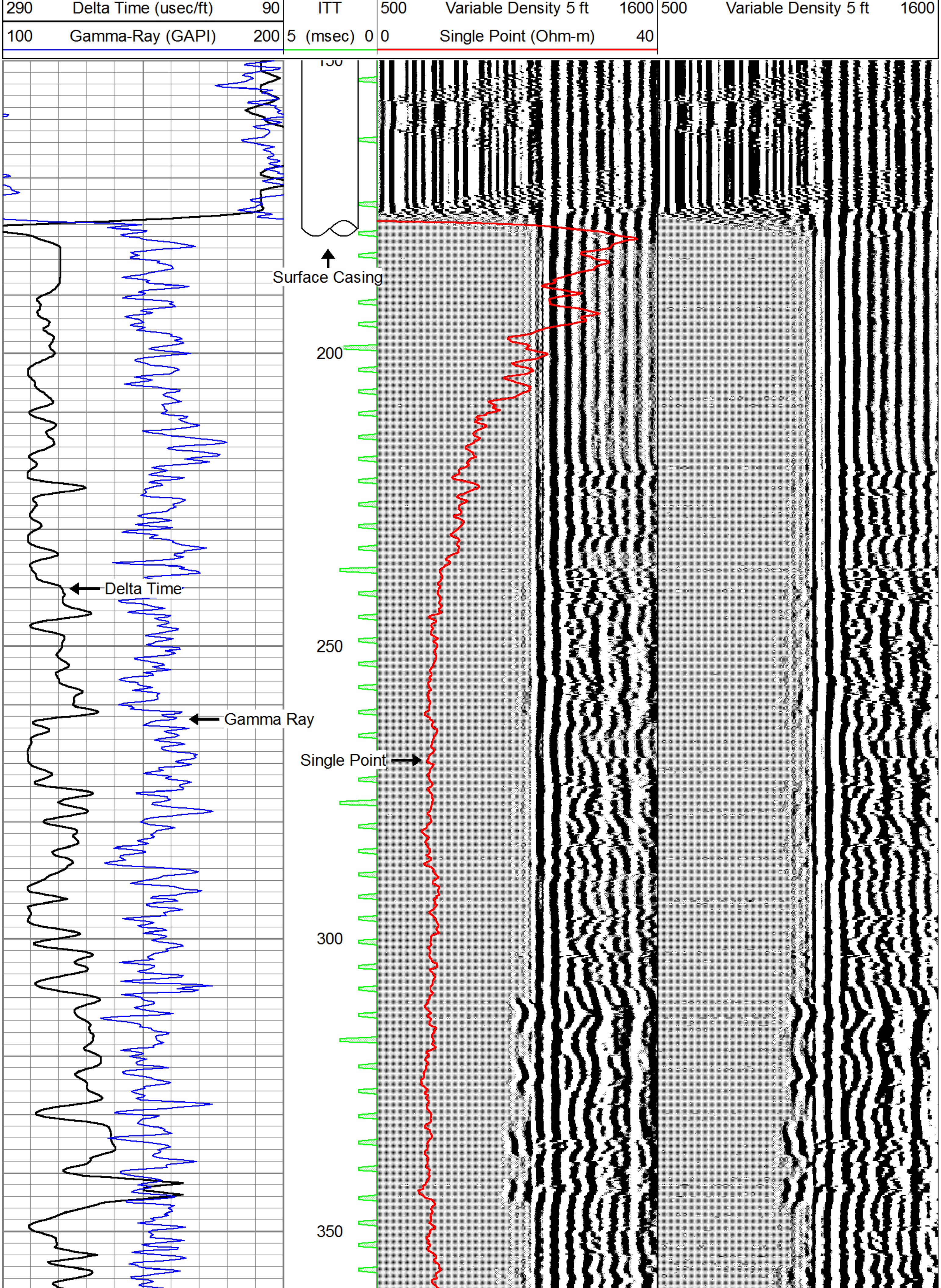
Permanent Datum	G.L.		Elevation above perm. datum	Elevation
Log Measured From	G.L.	0'		K.B.
Drilling Measured From	G.L.			D.F.
				G.L.

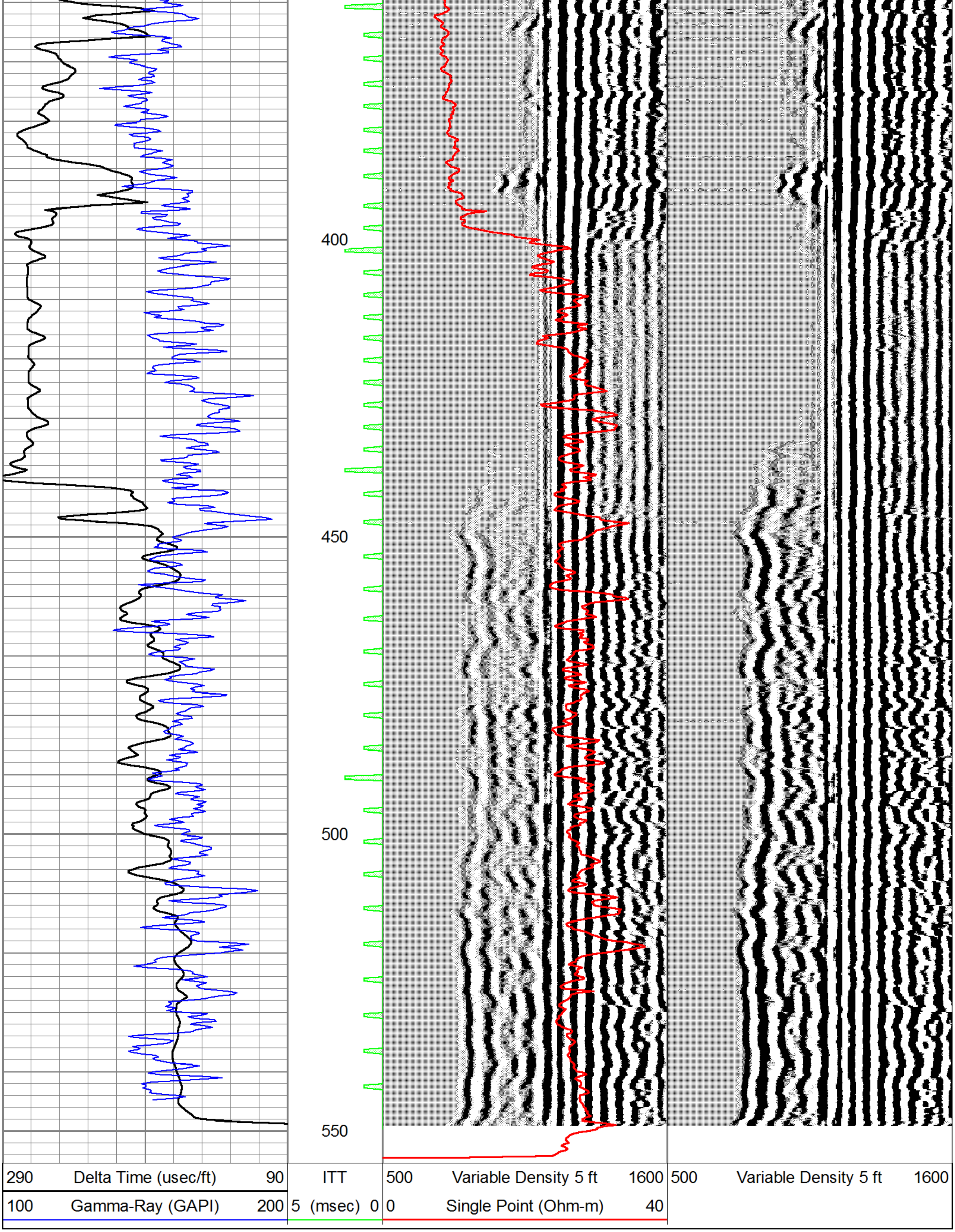
Date	9-6-2014		
Run Number	ONE		
Depth Driller	555'		
Depth Logger	555'		
Bottom Logged Interval	555'		
Top Log Interval	140'		
Casing Driller	9 7/8" TO 180'		
Casing Logger	179'		
Bit Size	8.5"		
Type Fluid in Hole	BENTONITE		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Meas. Temp	5.05 @ 95.5F		
Rmf @ Meas. Temp	4.79 @ 95.5F		
Rmc @ Meas. Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Circulation Stopped	11:00		
Time Logger on Bottom	12:30		
Max. Recorded Temperature	N/A		
Equipment Number	PS-5		
Location	LA		
Recorded By	WATKINS		
Witnessed By	S. BARBER		

<<< Fold Here >>>

Comments

Database File	18736.db
Dataset Pathname	SNC
Presentation Format	slt
Dataset Creation	Sat Sep 06 13:11:40 2014
Charted by	Depth in Feet scaled 1:240


290 Delta Time (usec/ft) 90
100 Gamma-Ray (GAPI) 200
ITT
5 (msec) 0
500 Variable Density 5 ft 1600
0 Single Point (Ohm-m) 40
500 Variable Density 5 ft 1600
150
200
250
300
350
Surface Casing
Delta Time
Gamma Ray
Single Point



400
450
500
550
290
Delta Time (usec/ft)
90
100
Gamma-Ray (GAPI)
200
ITT
5 (msec) 0
500
Variable Density 5 ft
1600
0
Single Point (Ohm-m)
40
500
Variable Density 5 ft
1600

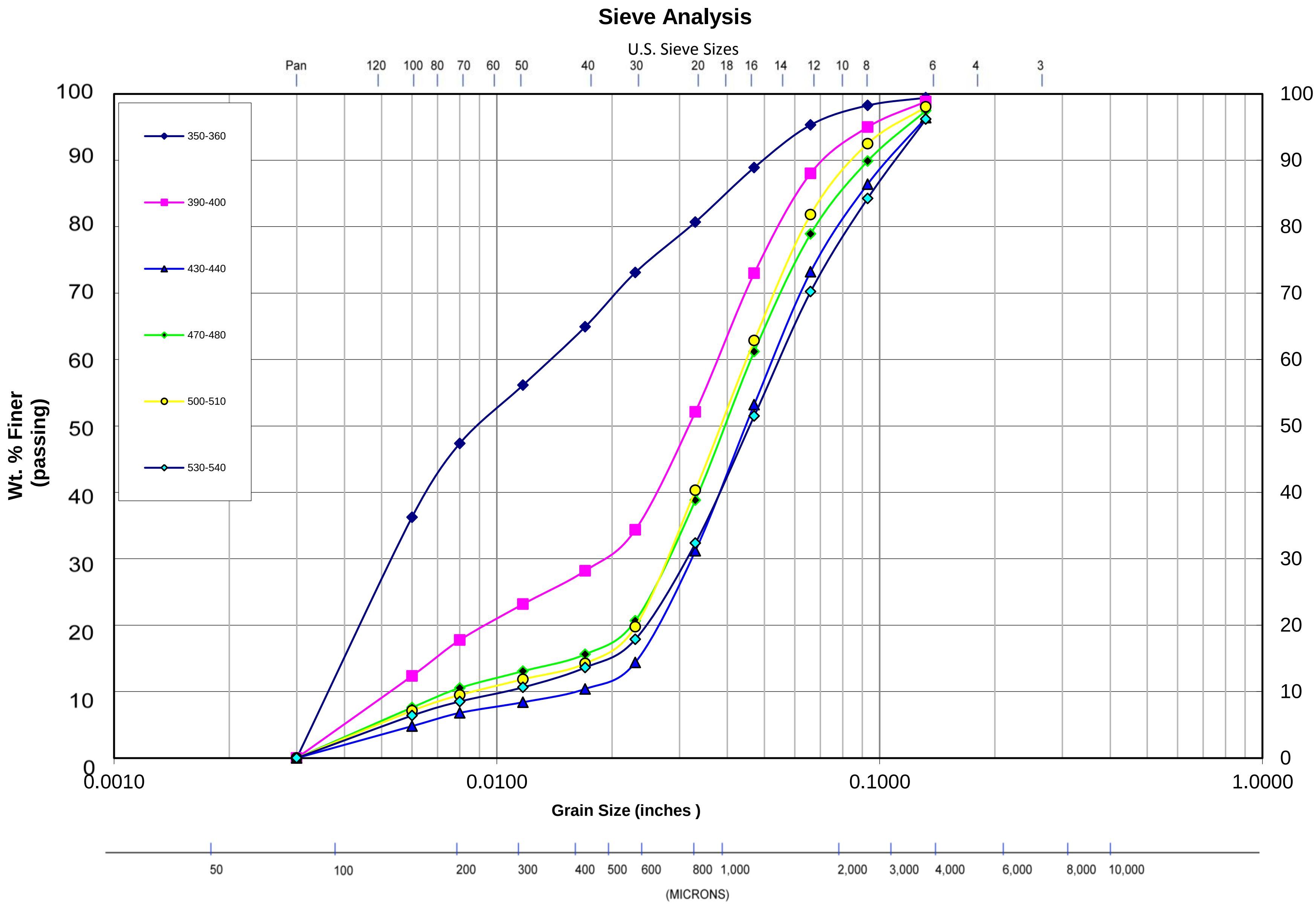
Appendix E: Geotechnical Analyses

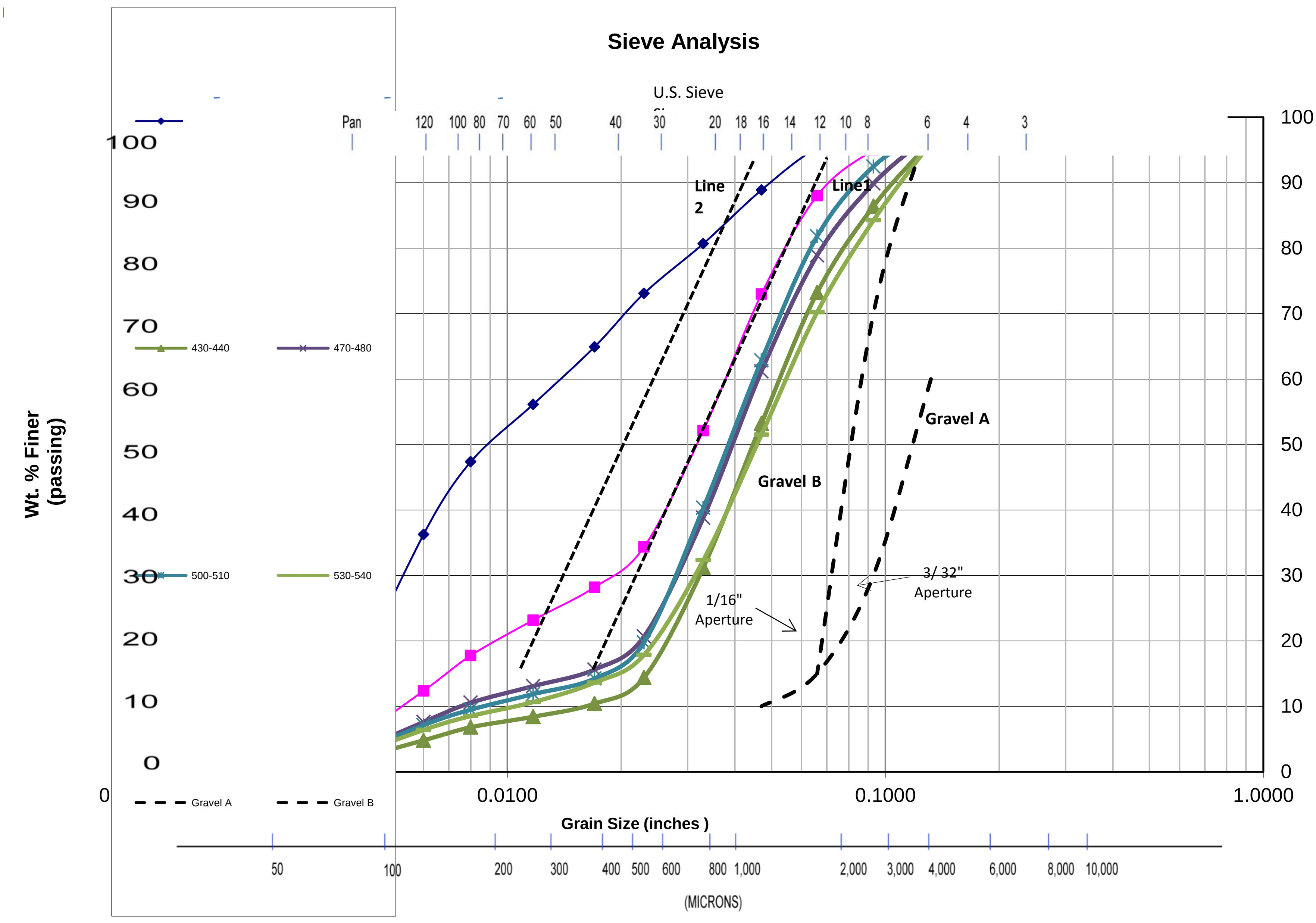
PW-1

SIEVE ANALYSIS

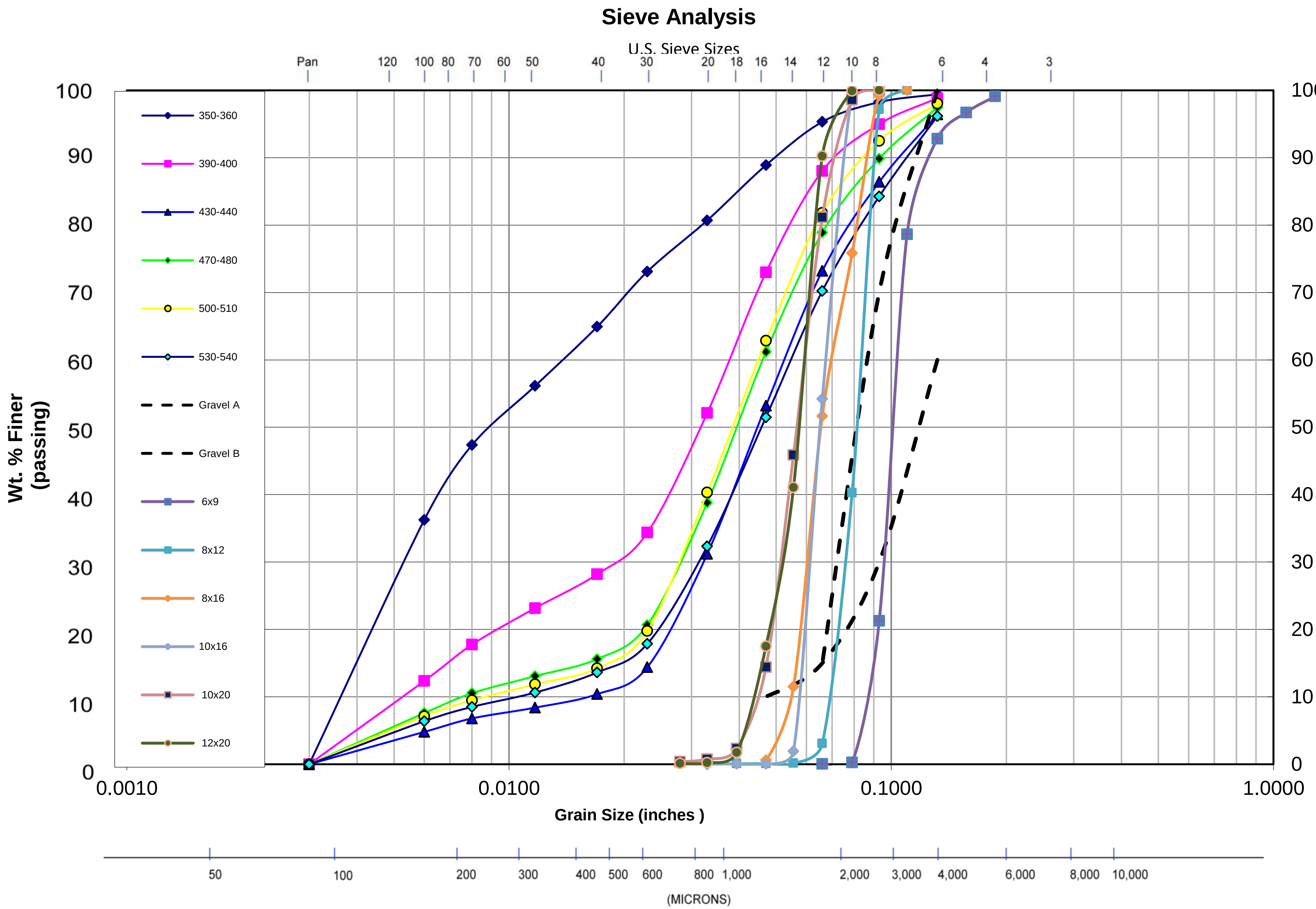
Enter Sample Depth and Cumulative Weight Retained in Yellow Boxes **For no value, enter** =NA()

						Sample 1			Sample 2			Sample 3			Sample 4			Sample 5			Sample 6		RMC Gravel Packs					
					Depth =	350-360		Depth =	390-400		Depth =	430-440		Depth =	470-480		Depth =	500-510		Depth =	530-540		Pack A		Pack B			
	Sieve #	Opening inches	Opening inches x 1000	mm	Cumulative Weight Retained	Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	% Retained (coarser)	% Passing (finer)	% Retained (coarser)	% Passing (finer)		
					350-360	350-360	350-360	390-400	390-400	390-400	430-440	430-440	430-440	470-480	470-480	470-480	500-510	500-510	500-510	530-540	530-540	530-540	Gravel A		Gravel B			
vf gravel	**6**	0.1320	132.0	3.38	1	1	99	3	1	99	9	4	96	6	3	97	5	2	98	9	4	96	40	60	0	100	**6**	0.1320
vf gravel	**8**	0.0930	93.0	2.38	3	2	98	13	5	95	34	14	86	24	10	90	19	8	92	37	16	84	70	30	30	70	**8**	0.0930
vc sand	**12**	0.0660	66.0	1.69	8	5	95	31	12	88	67	27	73	50	21	79	46	18	82	70	30	70	85	15	85	15	**12**	0.0660
vc sand	**16**	0.0470	47.0	1.20	19	11	89	70	27	73	117	47	53	92	39	61	94	37	63	114	49	51	90	10	#N/A	#N/A	**16**	0.0470
coarse sand	**20**	0.0330	33.0	0.84	33	19	81	124	48	52	172	69	31	145	61	39	151	60	40	159	68	32	#N/A	#N/A	#N/A	#N/A	**20**	0.0330
coarse sand	**30**	0.0230	23.0	0.59	46	27	73	170	66	34	214	86	14	188	79	21	203	80	20	193	82	18	#N/A	#N/A	#N/A	#N/A	**30**	0.0230
med sand	**40**	0.0170	17.0	0.44	60	35	65	186	72	28	224	90	10	200	84	16	217	86	14	203	86	14	#N/A	#N/A	#N/A	#N/A	**40**	0.0170
med sand	**50**	0.0117	11.7	0.30	75	44	56	199	77	23	229	92	8	206	87	13	223	88	12	210	89	11	#N/A	#N/A	#N/A	#N/A	**50**	0.0117
fine sand	**70**	0.0080	8.0	0.20	90	53	47	213	82	18	233	93	7	212	89	11	229	91	9	215	91	9	#N/A	#N/A	#N/A	#N/A	**70**	0.0080
fine sand	**100**	0.0060	6.0	0.15	109	64	36	227	88	12	238	95	5	219	92	8	235	93	7	220	94	6	#N/A	#N/A	#N/A	#N/A	**##**	0.0060
-	**Pan**	0.0030	3.0	0.00	171	100	0	259	100	0	250	100	0	237	100	0	253	100	0	235	100	0	#N/A	#N/A	#N/A	#N/A	**Pan**	0.0030

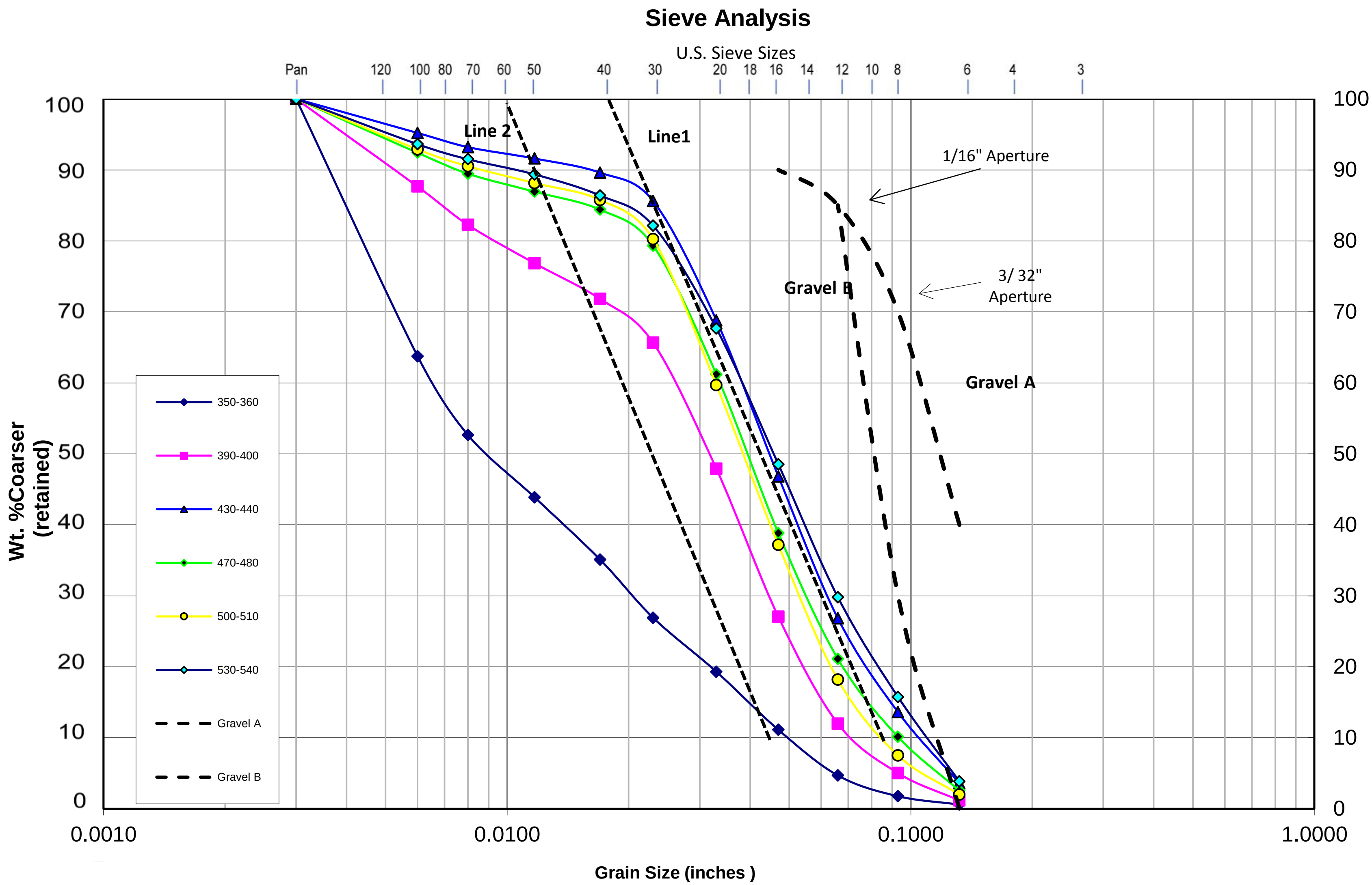

Sieve Analysis
U.S. Sieve Sizes
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
350-360
390-400
430-440
470-480
500-510
530-540
Wt. % Finer
(passing)
0
10
20
30
40
50
60
70
80
90
100
0.0010
0.0100
0.1000
1.0000
Grain Size (inches)
50
100
200
300
400
500
600
800
1,000
2,000
3,000
4,000
6,000
8,000
10,000
(MICRONS)



Sieve Analysis
U.S. Sieve
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
430-440
470-480
500-510
530-540
Gravel A
Gravel B
Wt. % Finer (passing)
Line 2
Line1
Gravel A
Gravel B
1/16" Aperture
3/ 32" Aperture
0.0100
0.1000
1.0000
Grain Size (inches)
50
100
200
300
400
500
600
800
1,000
2,000
3,000
4,000
6,000
8,000
10,000
(MICRONS)



Sieve Analysis
U.S. Sieve Sizes
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
Wt. % Finer (passing)
Grain Size (inches)
0.0010
0.0100
0.1000
1.0000
0
10
20
30
40
50
60
70
80
90
100
350-360
390-400
430-440
470-480
500-510
530-540
Gravel A
Gravel B
6x9
8x12
8x16
10x16
10x20
12x20
50
100
200
300
400
500
600
800
1,000
2,000
3,000
4,000
6,000
8,000
10,000
(MICRONS)



Sieve Analysis
U.S. Sieve Sizes
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
Line 2
Line1
1/16" Aperture
3/ 32" Aperture
Gravel B
Gravel A
350-360
390-400
430-440
470-480
500-510
530-540
Gravel A
Gravel B
Wt. %Coarser (retained)
Grain Size (inches)
0.0010
0.0100
0.1000
1.0000

Typical Gravel Pack Blends Apr-09

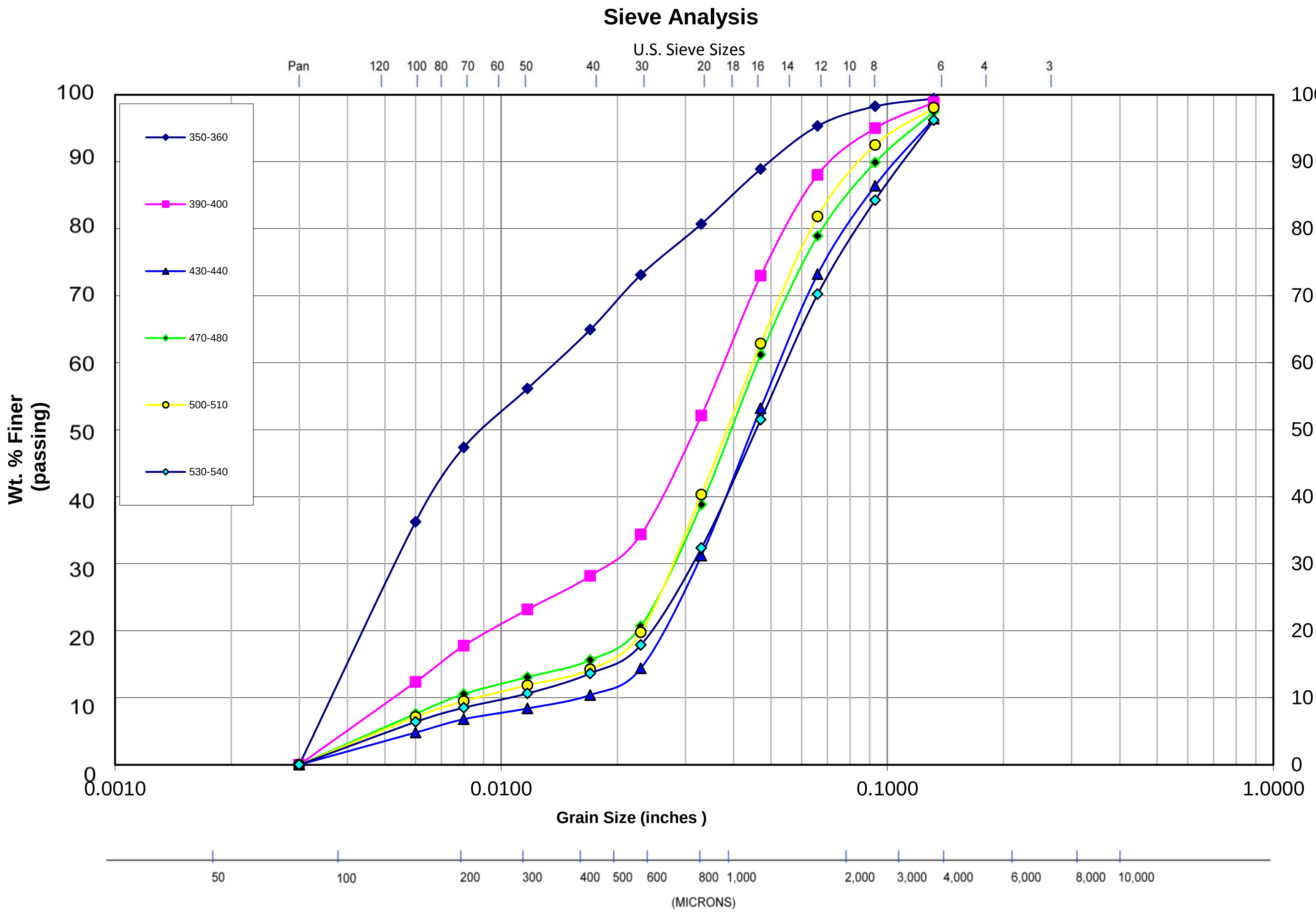
	U, S. Sieve #	Opening inches	Opening mm	6x9 Cumulative % Retained (coarser)	Cumulative % Passing (finer)	8x12 Cumulative % Retained (coarser)	Cumulative % Passing (finer)	8x16 Cumulative % Retained (coarser)	Cumulative % Passing (finer)	10x16 Cumulative % Retained (coarser)	Cumulative % Passing (finer)	10x20 Cumulative % Retained (coarser)	Cumulative % Passing (finer)	12x20 Cumulative % Retained (coarser)	Cumulative % Passing (finer)
				6x9	6x9	8x12	8x12	8x16	8x16	10x16	10x16	10x20	10x20	12x20	12x20
	3	0.2630	6.73	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	1/4	0.2500	6.40	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
f gravel	**4**	0.1870	4.79	0.9	99.1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
f gravel	**5**	0.1570	4.02	3.3	96.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
vf gravel	**6**	0.1320	3.38	7.17	92.83	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
vf gravel	**7**	0.1100	2.82	21.36	78.64	0	100	0	100	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
vf gravel	**8**	0.0930	2.38	78.7	21.3	2.83	97.17	0.78	99.22	0	100	0	100	0	100
vc sand	**10**	0.0790	2.02	99.72	0.28	59.71	40.29	24.17	75.83	0.66	99.34	1.39	98.61	0.11	99.89
vc sand	**12**	0.0660	1.69	99.93	0.07	96.94	3.06	48.34	51.66	45.81	54.19	18.84	81.16	9.78	90.22
vc sand	**14**	0.0555	1.42	#N/A	#N/A	99.85	0.15	88.5	11.5	98.09	1.91	54.11	45.89	58.91	41.09
vc sand	**16**	0.0470	1.20	#N/A	#N/A	99.92	0.08	99.42	0.58	99.93	0.07	85.6	14.4	82.5	17.5
coarse sand	18	0.0394	1.01	#N/A	#N/A	99.92	0.08	99.9	0.1	99.93	0.07	97.69	2.31	98.26	1.74
coarse sand	20	0.0330	0.84	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	100	0	99.26	0.74	99.78	0.22
coarse sand	25	0.0280	0.72	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	99.63	0.37	99.89	0.11
coarse sand	30	0.0230	0.59	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
med sand	35	0.0197	0.50	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
med sand	40	0.0170	0.44	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
med sand	50	0.0117	0.30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	60	0.0098	0.25	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	70	0.0080	0.20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	80	0.0070	0.18	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	100	0.0060	0.15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	120	0.0049	0.13	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
-	**Pan**	0.0030	0.00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

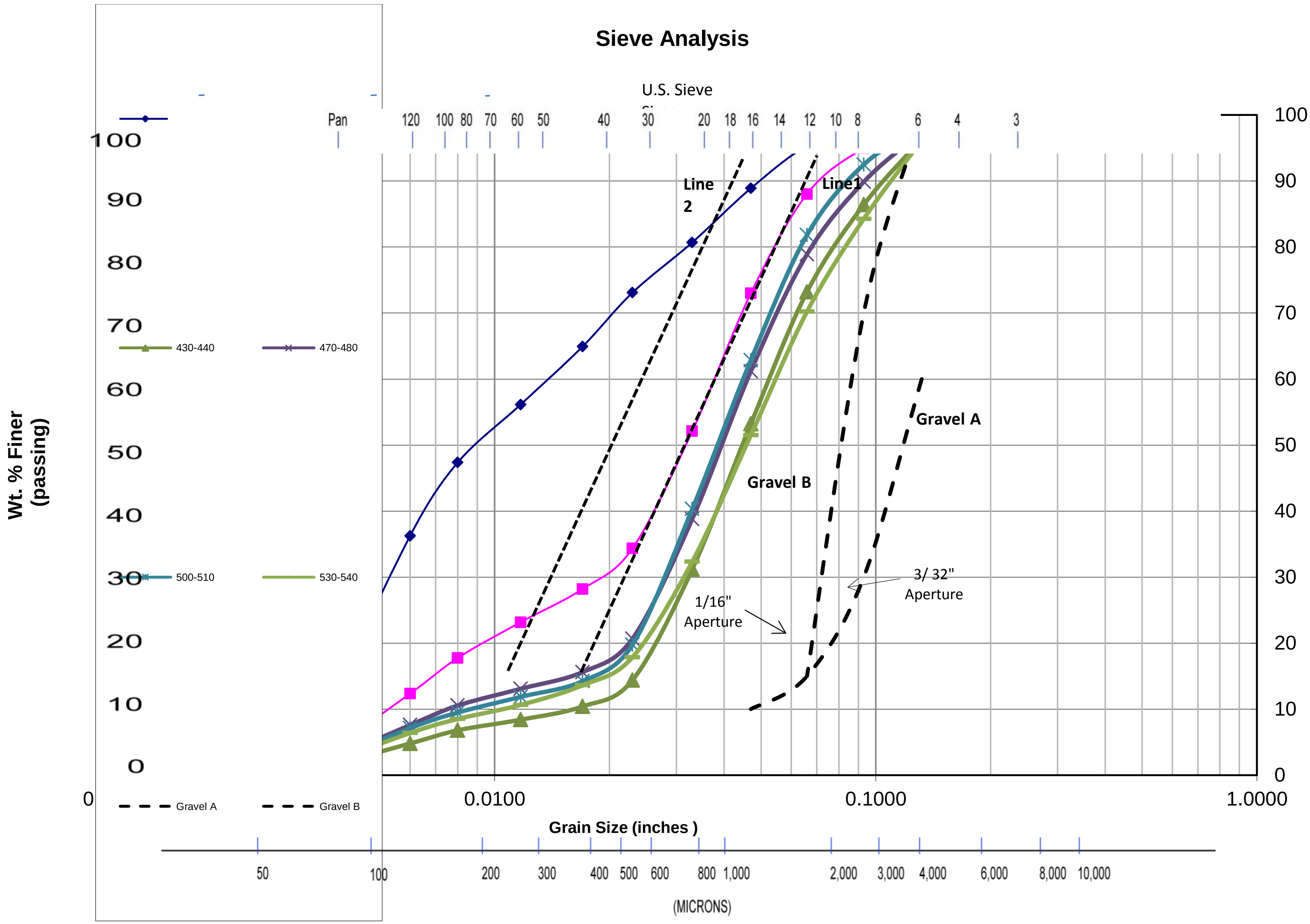
OW-1

SIEVE ANALYSIS

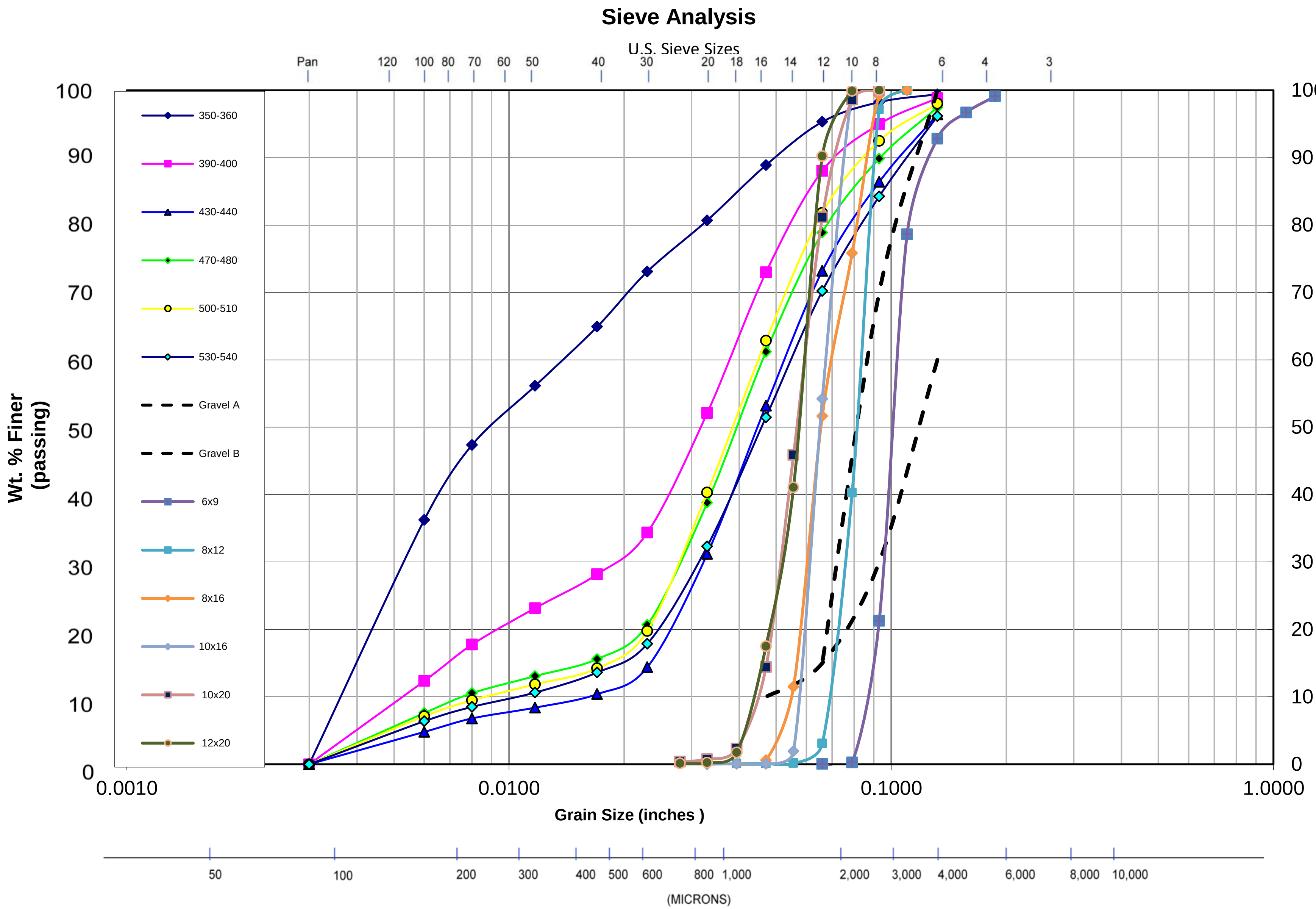
Enter Sample Depth and Cumulative Weight Retained in Yellow Boxes **For no value, enter** =NA()

						Sample 1			Sample 2			Sample 3			Sample 4			Sample 5			Sample 6		RMC Gravel Packs					
					Depth =	350-360		Depth =	390-400		Depth =	430-440		Depth =	470-480		Depth =	500-510		Depth =	530-540		Pack A		Pack B			
	Sieve #	Opening inches	Opening inches x 1000	mm	Cumulative Weight Retained	Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	Cumulative Weight Retained	% Retained (coarser)	% Passing (finer)	% Retained (coarser)	% Passing (finer)	% Retained (coarser)	% Passing (finer)		
					350-360	350-360	350-360	390-400	390-400	390-400	430-440	430-440	430-440	470-480	470-480	470-480	500-510	500-510	500-510	530-540	530-540	530-540	Gravel A		Gravel B			
vf gravel	**6**	0.1320	132.0	3.38	1	1	99	3	1	99	9	4	96	6	3	97	5	2	98	9	4	96	40	60	0	100	**6**	0.1320
vf gravel	**8**	0.0930	93.0	2.38	3	2	98	13	5	95	34	14	86	24	10	90	19	8	92	37	16	84	70	30	30	70	**8**	0.0930
vc sand	**12**	0.0660	66.0	1.69	8	5	95	31	12	88	67	27	73	50	21	79	46	18	82	70	30	70	85	15	85	15	**12**	0.0660
vc sand	**16**	0.0470	47.0	1.20	19	11	89	70	27	73	117	47	53	92	39	61	94	37	63	114	49	51	90	10	#N/A	#N/A	**16**	0.0470
coarse sand	**20**	0.0330	33.0	0.84	33	19	81	124	48	52	172	69	31	145	61	39	151	60	40	159	68	32	#N/A	#N/A	#N/A	#N/A	**20**	0.0330
coarse sand	**30**	0.0230	23.0	0.59	46	27	73	170	66	34	214	86	14	188	79	21	203	80	20	193	82	18	#N/A	#N/A	#N/A	#N/A	**30**	0.0230
med sand	**40**	0.0170	17.0	0.44	60	35	65	186	72	28	224	90	10	200	84	16	217	86	14	203	86	14	#N/A	#N/A	#N/A	#N/A	**40**	0.0170
med sand	**50**	0.0117	11.7	0.30	75	44	56	199	77	23	229	92	8	206	87	13	223	88	12	210	89	11	#N/A	#N/A	#N/A	#N/A	**50**	0.0117
fine sand	**70**	0.0080	8.0	0.20	90	53	47	213	82	18	233	93	7	212	89	11	229	91	9	215	91	9	#N/A	#N/A	#N/A	#N/A	**70**	0.0080
fine sand	**100**	0.0060	6.0	0.15	109	64	36	227	88	12	238	95	5	219	92	8	235	93	7	220	94	6	#N/A	#N/A	#N/A	#N/A	**##**	0.0060
-	**Pan**	0.0030	3.0	0.00	171	100	0	259	100	0	250	100	0	237	100	0	253	100	0	235	100	0	#N/A	#N/A	#N/A	#N/A	**Pan**	0.0030

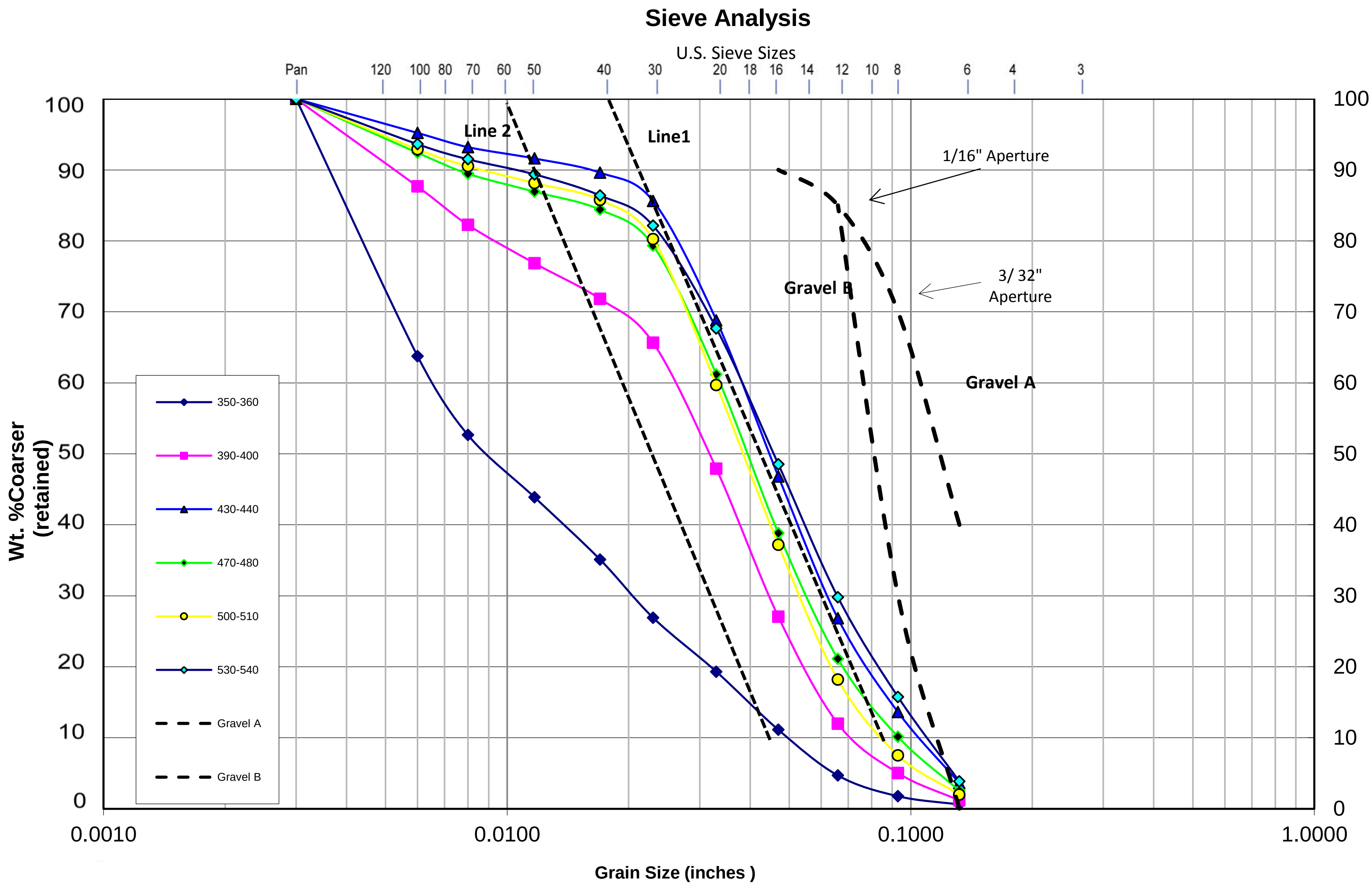

Sieve Analysis
U.S. Sieve Sizes
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
350-360
390-400
430-440
470-480
500-510
530-540
Wt. % Finer (passing)
0
10
20
30
40
50
60
70
80
90
100
0.0010
0.0100
0.1000
1.0000
Grain Size (inches)
50
100
200
300
400
500
600
800
1,000
2,000
3,000
4,000
6,000
8,000
10,000
(MICRONS)



Sieve Analysis
U.S. Sieve
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
Wt. % Finer (passing)
430-440
470-480
500-510
530-540
Gravel A
Gravel B
Line 2
Line1
Gravel A
Gravel B
1/16" Aperture
3/ 32" Aperture
0.0100
0.1000
1.0000
Grain Size (inches)
50
100
200
300
400
500
600
800
1,000
2,000
3,000
4,000
6,000
8,000
10,000
(MICRONS)



Sieve Analysis
U.S. Sieve Sizes
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
350-360
390-400
430-440
470-480
500-510
530-540
Gravel A
Gravel B
6x9
8x12
8x16
10x16
10x20
12x20
Wt. % Finer (passing)
0
10
20
30
40
50
60
70
80
90
100
0.0010
0.0100
0.1000
1.0000
Grain Size (inches)
50
100
200
300
400
500
600
800
1,000
2,000
3,000
4,000
6,000
8,000
10,000
(MICRONS)



Sieve Analysis
U.S. Sieve Sizes
Pan
120
100
80
70
60
50
40
30
20
18
16
14
12
10
8
6
4
3
Line 2
Line1
1/16" Aperture
3/ 32" Aperture
Gravel B
Gravel A
350-360
390-400
430-440
470-480
500-510
530-540
Gravel A
Gravel B
Wt. %Coarser (retained)
Grain Size (inches)
0.0010
0.0100
0.1000
1.0000

Typical Gravel Pack Blends Apr-09

				6x9		8x12		8x16		10x16		10x20		12x20	
	U, S. Sieve #	Opening inches	Opening mm	Cumulative % Retained (coarser)	Cumulative % Passing (finer)	Cumulative % Retained (coarser)	Cumulative % Passing (finer)	Cumulative % Retained (coarser)	Cumulative % Passing (finer)	Cumulative % Retained (coarser)	Cumulative % Passing (finer)	Cumulative % Retained (coarser)	Cumulative % Passing (finer)	Cumulative % Retained (coarser)	Cumulative % Passing (finer)
				6x9	6x9	8x12	8x12	8x16	8x16	10x16	10x16	10x20	10x20	12x20	12x20
	3	0.2630	6.73	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	1/4	0.2500	6.40	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
f gravel	**4**	0.1870	4.79	0.9	99.1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
f gravel	**5**	0.1570	4.02	3.3	96.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
vf gravel	**6**	0.1320	3.38	7.17	92.83	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
vf gravel	**7**	0.1100	2.82	21.36	78.64	0	100	0	100	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
vf gravel	**8**	0.0930	2.38	78.7	21.3	2.83	97.17	0.78	99.22	0	100	0	100	0	100
vc sand	**10**	0.0790	2.02	99.72	0.28	59.71	40.29	24.17	75.83	0.66	99.34	1.39	98.61	0.11	99.89
vc sand	**12**	0.0660	1.69	99.93	0.07	96.94	3.06	48.34	51.66	45.81	54.19	18.84	81.16	9.78	90.22
vc sand	**14**	0.0555	1.42	#N/A	#N/A	99.85	0.15	88.5	11.5	98.09	1.91	54.11	45.89	58.91	41.09
vc sand	**16**	0.0470	1.20	#N/A	#N/A	99.92	0.08	99.42	0.58	99.93	0.07	85.6	14.4	82.5	17.5
coarse sand	18	0.0394	1.01	#N/A	#N/A	99.92	0.08	99.9	0.1	99.93	0.07	97.69	2.31	98.26	1.74
coarse sand	20	0.0330	0.84	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	100	0	99.26	0.74	99.78	0.22
coarse sand	25	0.0280	0.72	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	99.63	0.37	99.89	0.11
coarse sand	30	0.0230	0.59	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
med sand	35	0.0197	0.50	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
med sand	40	0.0170	0.44	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
med sand	50	0.0117	0.30	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	60	0.0098	0.25	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	70	0.0080	0.20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	80	0.0070	0.18	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	100	0.0060	0.15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
fine sand	120	0.0049	0.13	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
-	**Pan**	0.0030	0.00	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Appendix F:
Well Development Records

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda Mountain Solar Client: Panorama ENV.
Project Number: 77511 Task #: 4.0 Start Date: 10-3-14 Time: 1200
Field Personnel: S. Barber Finish Date: 10-4-14 Time: 1810

WELL INFORMATION

Well ID: PW-01
Casing ID: 10.75 Inches
Screen Interval: 475-545
Borehole Diameter: 20 Inches
Filter Pack Interval: 458-555

EVENT TYPE

- ☒ Well Development
- ☐ Low-Flow / Low-Stress Sampling
- ☐ Well Volume Approach Sampling
- ☐ Other (Specify below)

PURGE INFORMATION

Purge Method: ☒ Bailer ☒ Pump
Bailer Type: 3" 20 foot stainless
Pump Type: 60 gpm. Grundfoes.
Tube/Pump Intake Depth: 480 ft.
Stabilized Pumping Rate: 10 gpm.

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth (Ft BToC)	Time (24-Hour)	Depth (Ft BToC)	Time (24-Hour)
LNAPL				
Groundwater	431.1	1209	450.1	1805
DNAPL				
Casing Base				

VOLUME CALCULATION AND PRODUCTION INFORMATION

Volume Calculation Type: ☒ Well Casing ☐ Borehole
Volume Per Foot: 4.7 gallon
Standing Water Column: 124 feet
1 Well Volume: 585 Gallons 3 Well Volumes: 1,755 Gallons
5 Well Volumes: 2,925 Gallons 10 Well Volumes: 5,850 Gallons
Total Volumes Produced: 3 Gallons
Well Purged Dry? ☐ Yes ☒ No

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (Gallons)	Depth to Water (Feet bgs)	Drawdown (Feet)	Temp (C)	pH (Std. Units)	SEC or Cond. (µSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (g/L)	Visual Clarity	Sand Cone (mg/L)
10.3	1325	200	434	3	33.88	8.84	2026	3.84	max	-24.3	1.319	Brown	—
10.4	0756	300	431.6	–	29.21	8.72	1963	3.81	285	120.6	1.274	cloudy	0
10.4	1535	–	431	–	–	–	–	–	–	–	–	–	–
Pump on	1542	–	444	13	35.26	8.97	1982	2.28	max	106.9	1.289	D. Brown	0
	1554	100	449.6	18.6	34.27	9.01	1913	2.79	L LO	99.3	1.244	D. Brown	0
	1604	200	450.6	19.6	34.34	9.06	1909	1.83	LLO	79.7	1.241	D. Brown	6
	1614	300	451.5	20.5	33.40	8.91	1902	2.13	LLO	76.1	1.237	D. Brown	1
	1624	400	450.9	19.9	34.34	8.71	1903	3.08	LLO	75.1	1.234	D. Brown	0

NOTES

LLO. turbidity light error: max reading 1000 NTU

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda mountain Solar — Client: Panorama ENV.

Project Number: 77511 — Task #: 4.0 — Start Date: 10.3.14 — Time: 1200

Field Personnel: S. Barber — Finish Date: 10.4.14 — Time: 1810

WELL INFORMATION

Well ID: PW-01

Casing ID: 10.75 Inches

EVENT TYPE

- [x] Well Development
- [ ] Well Volume Approach Sampling
- [ ] Low-Flow / Low Stress Sampling
- [ ] Other (Specify):
- [x] Meter YSI 556 mps
- [x] Meter Hanna HI 98703

WATER QUALITY INDICATOR PARAMETERS (continued)

Date	Time (24-Hour)	Volume Removed (gall.)	Depth to Water (Ft BTOC)	Drawdown (Feet)	Temp. (C)	pH (Std. Units)	SEC or Cond. (uSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (mg/L)	Visual Clarity	Sand Cone (mg/L)
10-4	1644	600	450.3	19.3	34.35	8.65	1915	1.76	<Lo	53.7	1.245	P. Brown	0
	1704	800	450.3	19.3	34.31	8.59	1936	2.07	<Lo	49.0	1.262	P. Brown	0
	1734	1100	450.3	19.3	33.94	8.58	1957	2.50	<Lo	45.9	1.273	P. Brown	0
	1744	1200	450.1	19.1	33.01	8.62	1976	2.34	<Lo	68.5	1.284	cloudy	0
	1755	1300	450.1	19.1	33.59	8.60	1983	2.38	max	63.3	1.290	cloudy	0
	1805	1400	450.1	19.1	33.59	8.61	1987	2.94	max	64.8	1.292	cloudy	0
Pump off	1810												

NOTES (continued)

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Solar Mountain Solar, Baker, Ca — Client: Panorama Env.

Project Number: 77511 — Task #: -4.0 — Start Date: 9-17-14 — Time: 1100

Field Personnel: — Finish Date: 9-17-14 — Time: 1815

WELL INFORMATION

Well ID: OW-01

Casing ID: 0.32 Inches

Screen Interval: 475-550

Borehole Diameter: 10 Inches

Filter Pack Interval: 473-555

EVENT TYPE

- [x] Well Development
- [ ] Low-Flow / Low-Stress Sampling
- [ ] Well Volume Approach Sampling
- [ ] Other (Specify below)

PURGE INFORMATION

Purge Method: [x] Bailer [x] Pump

Bailer Type: 10' stainless 3inch diameter

Pump Type: 3" grundfoes

Tube/Pump Intake Depth: 535 ft-bTOC

Stabilized Pumping Rate: 4 gallons per minute

DEPTH MEASUREMENTS

	INITIAL Depth (ft toc)	INITIAL Time (24-Hour)	FINAL Depth (ft toc)	FINAL Time (24-Hour)
LNAPL	—			
Groundwater	438.0	1630	455.4	1810
DNAPL	—			
Casing Base	555			

VOLUME CALCULATION AND PRODUCTION INFORMATION

Volume Calculation Type: [x] Well Casing [ ] Borehole

Volume Per Foot: 0.65 gallons

Standing Water Column: 117 feet

1 Well Volume: 76 Gallons — 3 Well Volumes: 228 Gallons

5 Well Volumes: 380 Gallons — 10 Well Volumes: 760 Gallons

Total Volumes Produced: ~ 280-400 Gallons

Well Purged Dry? [ ] Yes [x] No

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (Gallons)	Depth to Water (Feet bgs)	Drawdown (Feet)	Temp (C)	pH (Std. Units)	SEC or Cond. (µSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Visual Clarity
9-17-14	1630	int	438.0	—	34.87	8.07	1938	1.67	max	103.4	Brown
9-17-14	1650	80	454.6	16.6	33.25	8.10	1929	2.24	max	108.0	Brown-pale
9-17-14	1710	160	454.6	16.6	33.55	8.09	1915	2.54	max	52.9	cloudy
9-17-14	1730	240	455.8	17.8	32.97	8.13	1922	2.56	max	54.5	cloudy
9-17-14	1750	320	455.6	17.6	32.93	8.22	1941	2.32	822	104.3	cloudy
9-17-14	1810	400	455.4	17.4	33.08	8.14	1924	2.36	393	72.2	cloudy
	X										

NOTES

YSI 556 MPS meter

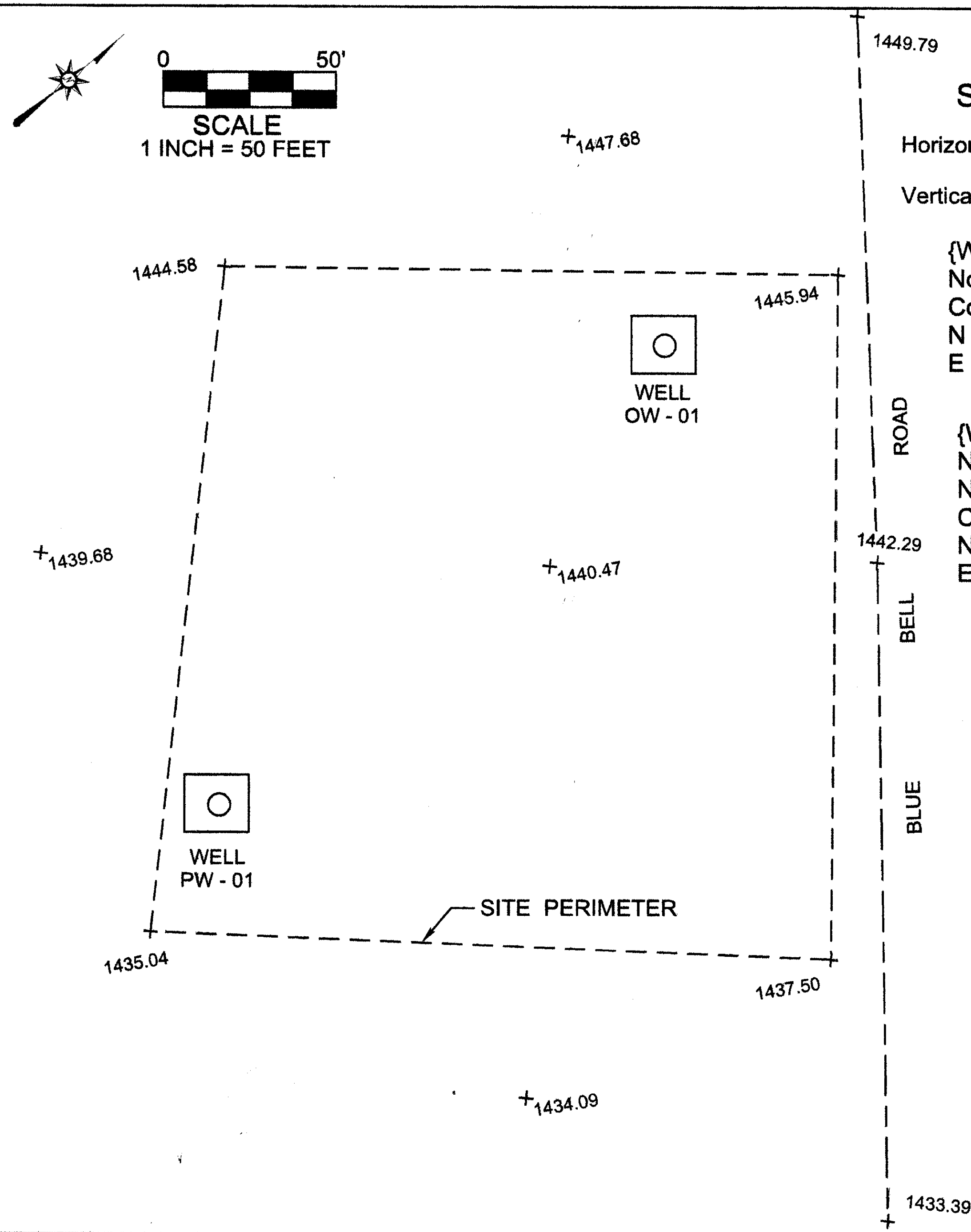
Hanna 98703 turbidity meter

TDS per well volume: ~~mg~~ g/L: 1.259, 1.253, 1.245, 1.252, 1.262, 1.251.

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

Appendix G:
Survey Data



SODA LAKE MONITORING WELL SITE

Horizontal Datum per NGS Point FT1131, Epoch 1991.35, NAD 1983

Vertical Datum per NGS Point FT1127, NAVD 1988

{WELL OW - 01}
North edge Casing Elevation = 1447.13 Feet.
Concrete Pad Elevation = 1444.77 Feet
N 2267177.79 Feet (CA. ZONE 5)
E 7110516.33 Feet

{WELL PW - 01}
North edge Casing (small pipe) Elevation = 1440.14 Feet.
North edge Casing (large pipe) Elevation = 1440.47 Feet.
Concrete Pad Elevation = 1437.46 Feet.
N 2266991.51 (CA. ZONE 5)
E 7110536.64

THE ELEVATIONS SHOWN IN THIS DRAWING REPRESENTS A SURVEY COMPLETED UNDER MY DIRECTION IN OCTOBER 2014.

Calvin J. Lindley
CALVIN J. LINDLEY
PLS 8906

DATE: October 15, 2014

PROFESSIONAL LAND SURVEYOR ★ STATE OF CALIFORNIA ★
CALVIN J. LINDLEY
No. 8906
Exp. 9/30/16

Traverse PC

Appendix H:
Paleontologic Report

September 10, 2014 Cogstone 3151

To: Leo Mena, Environmental Analyst, Panorama Environmental, Inc.
From: Kim Scott, Director of Paleontology

RE: Soda Mountain water wells on Blue Bell Mine Road, San Bernardino County, CA

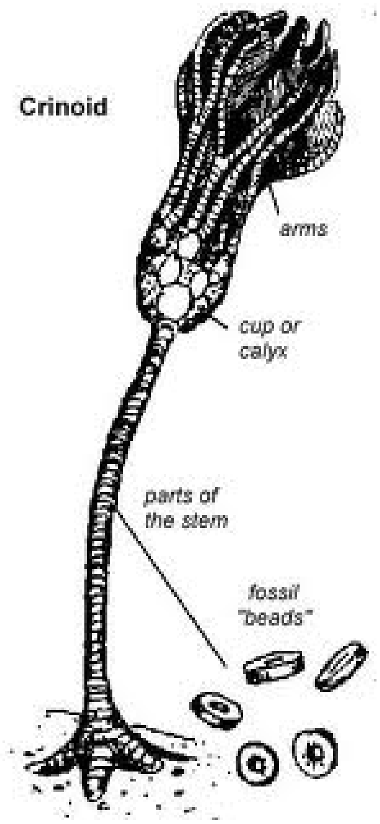
Paleontological sampling of one well, OW-01was conducted from September 2-4th, 2014 by Kim Scott of Cogstone. Well PW-01 had been cut to 540 ft from Aug 19th to 27th, 2014 and the sediments retained for inspection. Review of Simon Barber's (Burns and McDonald) drill logs and sediment samples revealed that the upper 170 ft consisted of angular to subangular pebbly sands of the alluvial fan. From 170 ft to the base of the shaft at 540 ft, sediments consisted of sands and clays which have a higher potential to contain fossil resources. Well OW-01 had been cut to 160 ft on Aug 29th, 2014. All sediments in well OW-01 from the surface to 160 ft consisted of angular to subangular pebbly sands of the alluvial fan.

Sediments from the prior cutting of PW-01 and OW-01 were dumped into soil roll off bins onsite so all sediments mixed. Because all stratigraphic context had been lost for the material in these bins, any fossils recovered from the bins would lack sufficient data to be considered significant.

To retain stratigraphic context during monitoring, approximately 3 gallons were wet screened from every 10 ft horizon for fossils. A bucket was placed under the sediment dump and was left to collect a steady stream of sediment. Once a bucket was removed a second was placed under the stream to provide a near continuous sample to wash. Screening was done using a 20 mesh (20 squares/ inch) screen to trap the remnants of small animals including rodents, birds, and reptiles.

Monitoring of OW-01 September 2-4, 2014
160-180 ft: sands and pebbles up to 6 cm in diameter
180-240 ft: sands fined to clays
240-400 ft: mostly clays
Due to monitoring hour constraints the last 140 ft were not monitored.

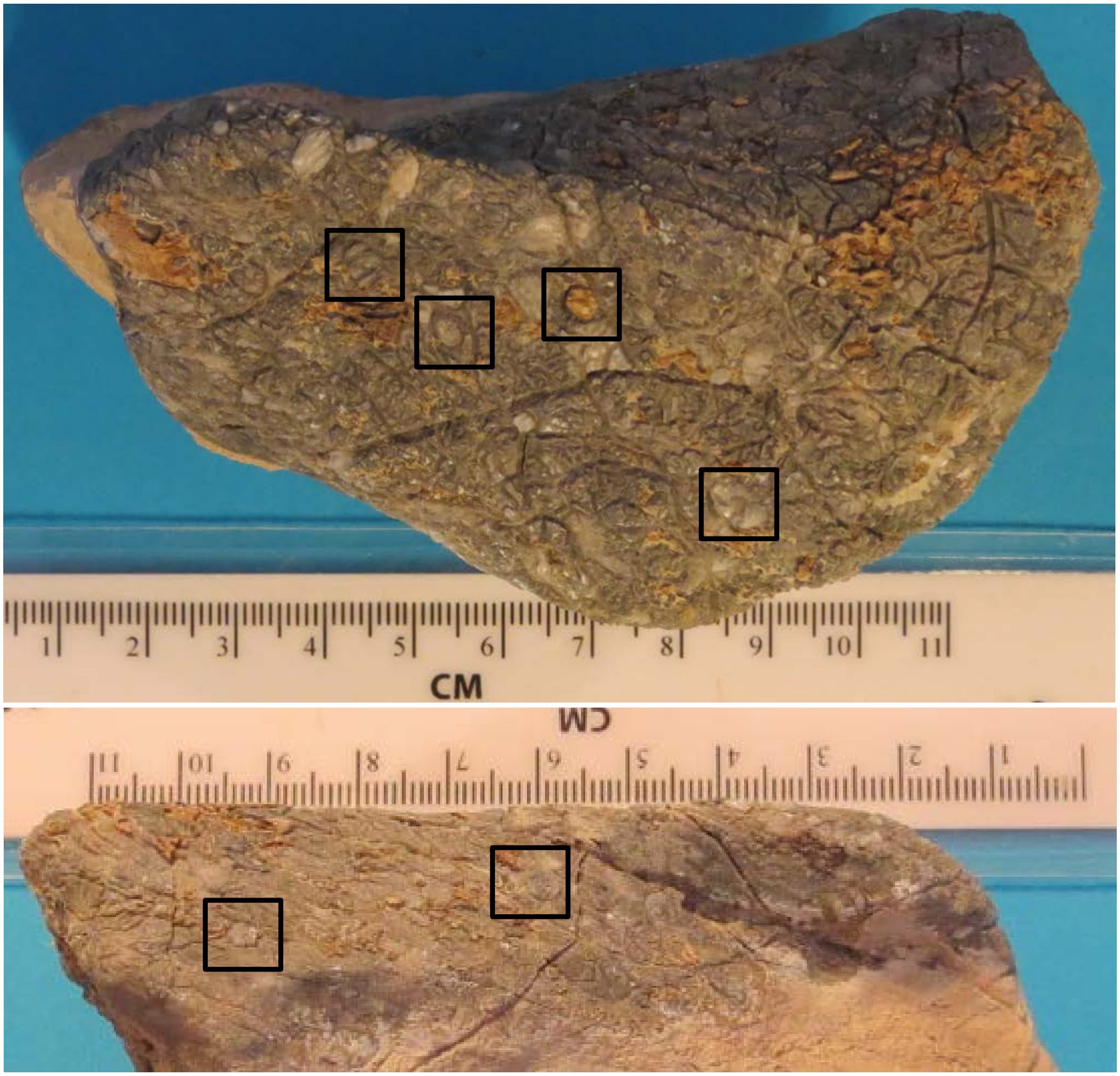
No *in situ* fossils were observed during monitoring, however sediments conducive to the preservation of fossil resources were observed from the samples collected from PW-01 ad what was observed in the field from OW-01. Two cobbles from the alluvial fan surface produced crinoid stem fragments and one small segment of stem was recovered from the 200-210 ft zone. Crinoids are an ancient type of echinoderm also known as a sea lily. These fossils are not *in situ* and are from the unnamed Carboniferous limestone in the Soda Mountains to the north of the work area (Jennings et al. 1962). As the material had lost the original position and as the material was only unidentifiable crinoid stem fragments, they are not considered sensitive paleontological resources. As such they were photographed and discarded.



General diagram of a crinoid.

A modern crinoid. from http://www.mbari.org/news/feature-image/sea-lily.html

A crinoid stem that eroded out of the Carboniferous limestone and collected from the 200-210 ft level.



One of cobbles containing crinoid stems from the Carboniferous limestone was collected from the surface of the alluvial fan. The crinoid sections look like small white washers in the grey limestone.

References:

Jennings, C. W., J. L. Burnett, and B. W. Troxel
1962 Geologic map of California, Trona Sheet. California Division of Mines and Geology, scale 1:250,000.

Appendix I:
Well Testing Field Records

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda Mountain Solar Client: Panorama ENV

Project Number: 77511 Task #: 4.0 Start Date: 10-05-2014 Time: 1154

Field Personnel: S. Barber G. Kenoyer Finish Date: 10-05-2014 Time: 1758

WELL INFORMATION

Well ID: PW-01

Casing ID: 10.75 Inches

Screen Interval: 475-545

Borehole Diameter: 20 Inches

Filter Pack Interval: 458-555

EVENT TYPE

- ☐ Well Development
- ☐ Low-Flow / Low-Stress Sampling
- ☐ Well Volume Approach Sampling
- ■ Other (Specify below) 90-minute step testing

PURGE INFORMATION

Purge Method: ☐ Bailer ■ Pump

Bailer Type: NA

Pump Type: 60 gpm Grundfos

Tube/Pump Intake Depth: 545

Stabilized Pumping Rate: 9-16-26-32

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth (Ft Btoc)	Time (24-Hour)	Depth (Ft Btoc)	Time (24-Hour)
LNAPL				
Groundwater	431.70	1154		
DNAPL				
Casing Base				

VOLUME CALCULATION AND PRODUCTION INFORMATION

Volume Calculation Type: ■ Well Casing ☐ Borehole

Volume Per Foot:

Standing Water Column: 123 feet

1 Well Volume: 580 Gallons 3 Well Volumes: 1,740 Gallons

5 Well Volumes: 2,900 Gallons 10 Well Volumes: 5,800 Gallons

Total Volumes Produced: Gallons

Well Purged Dry? ☐ Yes ■ No

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (Gallons)	Depth to Water (Feet bgs)	Drawdown (Feet)	Temp (C)	pH (Std. Units)	SEC or Cond. (µSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (g/L)	Visual Clarity	Sand Cone (mg/L)
10-5/9gm	1208	–	–	–	–	–	–	–	–	–	–	–	–
9gpm	1217	80	443.5	11.8	34.23	8.48	2012	2.78	max	87.6	1.308	P. Brown	150
9gpm	1238	~~190~~ 270	444.9	13.2	34.77	8.33	2032	1.38	max	33.5	1.321	P. Brown	1
9gpm	1308	540	445.18	13.48	34.14	8.33	2045	2.05	96.9	34.4	1.328	cloudy	0.5
9gpm	1338	810	444.92	13.22	33.80	8.33	2030	2.23	30.4	42.4	1.318	P. cloudy	0
10.5/16gpm	1347	954	457.8	26.10	33.66	8.36	2002	2.90	75.6	43.1	1.301	P. cloudy	0
16gpm	1412	1354	460.31	28.61	33.91	8.61	2012	1.95	max	37.8	1.370	cloudy	1.5
16gpm	1452	1994	459.35	27.65	33.70	8.65	2080	2.79	201	145.5	1.351	cloudy	0

NOTES

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda Mountain Solar — Client: Panorama Env.

Project Number: 77511 — Task #: 4.0 — Start Date: 10-5-14 — Time: 1154

Field Personnel: S. Barber G. Kenoyer — Finish Date: 10-5-14 — Time:

WELL INFORMATION

Well ID: PW-01

Casing ID: 10.75 Inches

EVENT TYPE

☐ Well Development

☐ Well Volume Approach Sampling

☐ Low-Flow / Low Stress Sampling

■ Other (Specify): 90 min. step

☒ Meter YSI 556 MPS

☒ Meter Hanna HI 98703

WATER QUALITY INDICATOR PARAMETERS (continued)

Date	Time (24-Hour)	Volume Removed (gall)	Depth to Water (ft BTOC)	Drawdown (Feet)	Temp. (C)	pH (Std. Units)	SEC or Cond. (µSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (mg/L)	Visual Clarity	Sand Cone (mg/L)
10.5/15gpm	1519	2400	459.25	27.55	33.73	8.52	2044	2.00	94.4	147.6	1.328	Cloudy	0
10.5/26gpm	1535	2816	468.00	36.30	33.50	8.53	2029	2.60	221	142.5	1.317	cloudy	0
24gpm	1550	3176	473.30	41.60	33.92	8.72	2020	2.25	LLO	143.0	1.313	Brown	1
26gpm	1603	3514	473.95	42.25	33.42	8.67	2050	1.81	985	138	1.322	P. Brown	1
24gpm	1630	4162	473.80	42.10	—	—	—	—	—	—	—	—	—
28gpm	1635	4302	475.10	43.40	33.71	8.57	2058	2.76	985	131.1	1.338	cloudy	2
26gpm	1639	4406	476.05	44.35	—	—	—	—	—	—	—	—	—
10.5/32gpm	1709	5366	479.30	47.60	—	—	—	—	—	—	—	—	—
32gpm	1720	5718	480.90	49.20	—	—	—	—	—	—	—	—	—
"	1751	6710	481.77	50.07	—	—	—	—	—	—	—	—	—
"	1758	6934	—	—	33.11	8.61	2066	2.13	549	82.2	1.342	cloudy	0.5

NOTES (continued)

LLO. Turbidity meter error. Light obstruction.

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda Mountain Solar Client: Panorama Env.

Project Number: 77511 Task #: 4.0 Start Date: 10.06.2014 Time: 0840.

Field Personnel: S. Baibar. A. McPeters. G. Konoyer Finish Date: 10.09.2014 Time: 1034

WELL INFORMATION

Well ID: PW-01

Casing ID: 10.75 Inches

Screen Interval: 475-545

Borehole Diameter: 20 Inches

Filter Pack Interval: 458.555

EVENT TYPE

☐ Well Development
☐ Low-Flow / Low-Stress Sampling
☐ Well Volume Approach Sampling
■ Other (Specify below)
72 hour aquifer test

PURGE INFORMATION

Purge Method: ☐ Bailer ■ Pump

Bailer Type:

Pump Type: 60 gpm. Grundfos

Tube/Pump Intake Depth: 545 ft Btoc

Stabilized Pumping Rate: 26 gpm

DEPTH MEASUREMENTS

	INITIAL		FINAL	
	Depth (Ft Btoc)	Time (24-Hour)	Depth (Ft Btoc)	Time (24-Hour)
LNAPL				
Groundwater	431.37	0840	474.35	1034
DNAPL				
Casing Base				

VOLUME CALCULATION AND PRODUCTION INFORMATION

Volume Calculation Type: ■ Well Casing ☐ Borehole

Volume Per Foot: 4.7 gall.

Standing Water Column: 123.63 feet

1 Well Volume: 583 Gallons 3 Well Volumes: 1,749 Gallons

5 Well Volumes: 2,915 Gallons 10 Well Volumes: 5,830 Gallons

Total Volumes Produced: 113,576 Gallons

Well Purged Dry? ☐ Yes ■ No

WATER QUALITY INDICATOR PARAMETERS

Date	Time (24-Hour)	Volume Removed (Gallons)	Depth to Water (Feet bgs)	Drawdown (Feet)	Temp (C)	pH (Std. Units)	SEC or Cond. (uSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (g/L)	Visual Clarity	Sand Cone (mg/L)
10.06.14	0926	15,358	431.37	–	–	–	–	–	–	–	–	–	–
	0927	–	451.10	19.73	31.47	7.10	2084	2.64	86.2	91.0	1.355	cloudy	6
	0957	–	463.48	32.11	–	–	–	–	–	–	–	–	–
	1016	–	469.85	32.48	32.15	8.38	2048	2.45	32.2	46.2	1.331	clear	0
	1047	17581	469.00	37.63	32.47	8.48	2045	2.06	26.1	42.6	1.325	clear	0
	1138	18819	469.99	38.62	34.02	8.48	2053	0.28	14.8	40.2	1.335	clear	2
	1411	22701	469.26	37.89	34.35	8.45	2059	0.33	4.99	22.8	1.336	clear	0
	1431	23205	471.55	40.18	34.51	8.44	2052	0.26	7.48	21.0	1.334	Clear	0

NOTES

Volume removed = flowmeter readings in gallons.
Initial flow meter reading: 15,358 gallons.
Final flow meter reading: 128,934

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda Mountain Solar — Client: Panorama ENV.

Project Number: 77511 — Task #: 4.0 — Start Date: 10.6.14 — Time: 0840

Field Personnel: S. Barber A. McPeters G. Kenoyer — Finish Date: 10.9.14 — Time: 1034

WELL INFORMATION

Well ID: PW-01

Casing ID: 10.75 Inches

EVENT TYPE

☐ Well Development
☐ Well Volume Approach Sampling
☐ Low-Flow / Low Stress Sampling
■ Other (Specify): 72 hour aquifer
■ Meter YSI 556 MPS
■ Meter Hanna HI 98703

WATER QUALITY INDICATOR PARAMETERS (continued)

Date	Time (24-Hour)	Volume Removed (gallons)	Depth to Water (ft BTOC)	Drawdown (Feet)	Temp. (C)	pH (Std. Units)	SEC or Cond. (µSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (mg/L)	Visual Clarity	Sand Cone (mg/L)
10.6.14	1636	26427	470.85	39.48	34.85	8.46	2060	0.20	5.73	-10.4	1.340	clear	0.1
	2018	32206	471.44	40.07	—	—	—	—	—	—	—	—	—
	2132	34071	471.85	40.48	—	—	—	—	—	—	—	—	—
10.7.14	0609	47510	472.76	41.39	—	—	—	—	—	—	—	—	—
	0845	51551	473.03	41.66	31.73	8.38	2058	0.90	5.04	-1.8	1.339	clear	2
	1244	57750	472.65	41.28	33.73	8.36	2048	0.13	1.55	-32.4	1.332	clear	0
	1322	58711	472.30	40.93	—	—	—	—	—	—	—	—	—
	1443	60800	472.39	41.02	34.44	8.35	2056	0.23	1.80	-36.4	1.337	clear	0.1
	1549	62591	472.28	40.91	34.24	8.35	2056	0.18	1.80	-29.4	1.336	clear	0
	1650	64027	472.27	40.90	34.06	8.34	2054	0.24	0.87	-31.7	1.336	clear	0
	1747	65591	472.29	40.92	33.01	8.36	2051	0.09	1.01	-29.8	1.333	clear	0
	1930	68142	472.68	41.32	32.19	8.37	2043	0.16	1.58	-36.6	1.328	clear	0
10.8.14	0524	83583	473.55	42.18	—	—	—	—	—	—	—	—	—
	0624	85133	473.81		27.76	8.43	2020	0.38	1.33	13.4	1.315	clear	0

NOTES (continued)

Vol. removed = Flowmeter reading in gallons.

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

WELL DEVELOPMENT AND GROUNDWATER SAMPLING FIELD FORM

PROJECT INFORMATION

Site: Soda Mountain Solar
Client: Panorama ENV.
Project Number: 77511 Task #: 4.0
Start Date: 10·06·2014 Time: 0840
Field Personnel: S. Barbar, A. McPeters, G. Kenoyer
Finish Date: 10·09·2014 Time: 1034

WELL INFORMATION

Well ID: PW-01
Casing ID: 10.75 inches

EVENT TYPE

☐ Well Development
☐ Well Volume Approach Sampling
☐ Low-Flow / Low Stress Sampling
■ Other (Specify): 72hour aquifer
☒ Meter YSF 556MPS
☒ Meter Hanna HI 98703

WATER QUALITY INDICATOR PARAMETERS (continued)

Date	Time (24-Hour)	Volume Removed (Gallons)	Depth to Water (Ft btoc)	Drawdown (Feet)	Temp. (C)	pH (Std. Units)	SEC or Cond. (µSem)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	TDS (~~mg/L~~)	Visual Clarity	Sand Cone (mg/L)
10·8·14	0804	87764	473.97	42.33	32.63	8.37	2047	0.09	1.27	-19.2	1.330	clear	0
	0921	89800	473.72	42.35	32.65	8.36	2041	0.12	1.72	-37.6	1.326	clear	0
	1158	93874	473.37	42.00	33.25	8.35	2037	0.17	1.48	-57.5	1.324	Clear	0
	1242	95023	473.23	41.86	33.25	8.24	2048	0.04	2.11	-57.6	1.331	Clear	0
	1342	96581	472.99	41.62	33.11	8.34	2049	0.08	1.10	-52.9	1.332	clear	0
	1526	99256	472.72	41.35	33.61	8.34	2048	0.07	0.85	-64.0	1.330	clear	0
	1630	100886	472.68	41.31	33.72	8.34	2047	0.07	1.0	-64.2	1.330	clear	0
10·9·14	0617	122241	474.09	42.72	31.92	8.41	2035	0.06	1.07	-93.5	1.323	clear	0
	0711	123605	474.48	43.11	31.49	8.38	2036	0.05	0.81	-86.2	1.322	Clear	0
	0850	126201	474.49	43.12	32.88	8.36	2035	0.05	1.28	-71.5	1.322	clear	0
	0921	127025	474.40	43.03	33.02	8.36	2047	0.11	1.28	-15.1	1.330	Clear	0
	1034	128934	474.35	42.98	33.10	8.36	2034	0.08	3.09	-45.7	1.323	clear	0

NOTES (continued)

Vol. Removed = Flow meter reading in gallons

ABBREVIATIONS

Cond. - Actual Conductivity
FT BTOC - Feet Below Top of Casing
NA - Not Applicable
NM - Not Measured
ORP - Oxidation-Reduction Potential
SEC - Specific Electrical Conductance
Std. Units - Standard Units
Temp - Temperature

Appendix J: Laboratory Data

PANORAMA
ENVIRONMENTAL, INC.

APPENDIX J CONTENTS

1. Soil Sample Waste Characterization Results
2. OW-1 Development Groundwater Sample Results
3. PW-1 Step-drawdown and Constant-rate Well Test Groundwater Sample Results

One Embarcadero Center, Suite 740 San Francisco, CA 94111 650-373-1200
www.panoramaenv.com

USEcology

WASTE PROFILE FORM

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US Ecology Idaho (Grand View) useics@usecology.com
US Ecology Texas (Robstown) usetcs@usecology.com
US Ecology Michigan (Detroit) usemcs@usecology.com

PROFILE #__________

A. GENERATOR INFORMATION

1. Generator Burns and McDonnell Engineering Co	☐ Billing information is same ☐ P.O. required for payment
2. Facility Address Soda Mountain	12. Billing Company North State Environmental
3. Mailing Address 400 Oyster Point Blvd.	13. Billing Address 1045 West Rialto Ave.
4. City/State/Zip South San Francisco, CA 94080	14. City/State/Zip Rialto CA 92376
5. Technical Contact Simon Baker	15. Billing Contact Gary Eaker
6. Phone (650) 808-7503 7. Fax	16. Phone (909) 875-9288 17. Fax (909) 421-7039
8. Generator Status ☐ CESQG ☑ SQG ☐ LQG	18. Email garynse@aol.com
9. EPA ID #	10. State ID #
11. SIC Codes:	

B. SHIPPING INFORMATION

1. US DOT Shipping name: Non-Hazardous waste liquid (Test well drilling water)

2. Hazard Class:	3. UN/NA #:	4. Packaging Group:	5. RQ:

6. Container Type ☑ Bulk ☐ Totes ☐ Pallet ☐ Boxes ☐ Drums ☐ Other, Describe: Tanker

7. Frequency ☐ Year ☐ Quarterly ☐ Monthly ☑ 1 time ☐ Other, Describe: 1x - many loads

8. Shipment Size: 5000 gal Quantity: 1-10

9. Waste Import ☐ Yes ☑ No
If yes, complete Waste Import Supplement

C. GENERAL MATERIAL & REGULATORY INFORMATION

1. Common name for this waste:
Test drilling water

2. Process generating the material:
Drilling

3. Describe physical appearance and odor of the waste:
Water with trace soil

4. Odor of the waste ☐ None ☑ Slight ☐ Strong
5. Physical State: ☑ Liquid ☐ Sludge/Slurry ☐ Solid
6. Describe Color: Brownish, black
7. Liquid phases: ☐ Single ☐ Double Layer ☐ Multi-layer
8. Knowledge is from ☑ Lab analysis ☐ MSDS ☑ Process/generator knowledge
9. Waste Type (US EcologyTexas customers only): ☐ Industrial ☐ Non-Industrial
10. Is the waste restricted under EPA Land Disposal Restrictions (§268) ☐ Yes ☑ No
11. If LDR "Yes", is waste: ☐ Wastewater ☐ Non-wastewater ☐ Debris (§268.2)
12. Alt. Standards for soil? ☐ Yes ☑ No
13. Is the waste RCRA hazardous waste containing benzene and originating at a Petroleum Refinery (SIC 2911), Chemical Manufacturing Plant (SIC 2800 thru 2899) or Coke by-Product Recovery Plant (SIC 3312)? (If "Yes" complete Benzene Waste Operations Supplement form) ☐ Yes ☑ No
14. VO Conc.(§264.1083) ☑ <500 ppmw ☐ ≥500ppmw
15. Has waste been treated after point of generation? ☐ Yes ☑ No
16. CERCLA Regulated (Superfund) Waste ☐ Yes ☑ No
17. Butadiene waste regulated by §63 Subpart XX ☐ Yes ☑ No
18. Waste contains UHC constituent(s) (§268.48), above a treatment standard, other than those for which the waste exhibits a characteristic. (If "yes", list all UHC's in Section D) ☐ Yes ☑ No
19. Waste exempt from definition of "solid waste" or "hazardous waste" (If "Yes", list reference 40CFR ______) ☐ Yes ☑ No

20. State Waste Codes	None					
21. RCRA Waste Codes	None					

22. Source Code: G______ 23. Form Code: W______ 24. Management Code: H______

D. MATERIAL COMPOSITION

Values are: ☐ TCLP ☑ TOTALS		Range total ≥ 100%		
Constituent	Units	Typical	Min	Max
Water	%			100
soil				<1

E. WASTE CHARACTERISTICS

1. Oxidizer	☐ Yes ☑ No	9. Reactive sulfides ________ppm	☐ Yes ☑ No
2. Explosive	☐ Yes ☑ No	10. Reactive cyanides________ppm	☐ Yes ☑ No
3. Organic peroxide	☐ Yes ☑ No	11. Water/air reactive	☐ Yes ☑ No
4. Shock sensitive	☐ Yes ☑ No	12. Thermally unstable	☐ Yes ☑ No
5. Tires	☐ Yes ☑ No	13. TSCA regulated PCB waste *(control sheet required with shipment)*	☐ Yes ☑ No
6. Pyrophoric	☐ Yes ☑ No	14. Medical/infectious waste	☐ Yes ☑ No
7. Compressed gas	☐ Yes ☑ No	15. Radioactive (*If yes, complete Profile Addendum for Radioactive Waste)*	☐ Yes ☑ No
8. Halogenated organics	☐ Yes ☑ No		

16. Possibility of incidental liquids from transportation? ☑ Yes ☐ No

17. Is waste a solid using the paint filter test? ☐ Yes (solid) ☑ No (not solid)

18. pH Range _______to _______ Typical N/A ☐ ≤ 2 ☑ 2 < 12.5 ☐ ≥ 12.5

19. Flash Point N/A º F ☐ < 140 º F

F. GENERATOR'S CERTIFICATION

☑ Yes ☐ No I certify this material may be disposed without further treatment.

I authorize US Ecology to correct inconsistencies on the waste profile form that impact waste management decisions with my oral or written authorization. US Ecology will require re-submittal of the waste profile information if substantial changes are determined necessary. I understand material that does not conform to specifications described in this profile may be rejected by US Ecology unless other contractual arrangements have been agreed to by both parties. I certify, under penalty of law, that I am familiar with this waste stream through analysis and/or process knowledge, and that all information provided is true, accurate, representative and complete, that all known or suspected hazards have been disclosed, and that this form was completed in accordance with the instructions provided.

Print Name	Signature	Title	Date

USEcology

WASTE PROFILE FORM

US Ecology Nevada (Beatty) usencs@usecology.com
US Ecology Idaho (Grand View) useics@usecology.com
US Ecology Texas (Robstown) usetcs@usecology.com
US Ecology Michigan (Detroit) usemcs@usecology.com

PROFILE #_______________

A. GENERATOR INFORMATION

1. Generator Burns and McDonnell Engineering Co	☐ Billing information is same ☐ P.O. required for payment
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5. Technical Contact Simon Baker	15. Billing Contact Gary Eaker
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8. Generator Status ☐ CESQG ☑ SQG ☐ LQG	18. Email garynse@aol.com
9. EPA ID #	10. State ID #

11. SIC Codes:						

B. SHIPPING INFORMATION

1. US DOT Shipping name: Non-Hazardous waste solid (Test well drilling cores)
2. Hazard Class: 3. UN/NA #: 4. Packaging Group: 5. RQ:
6. Container Type ☑ Bulk ☐ Totes ☐ Pallet ☐ Boxes ☐ Drums ☐ Other, Describe: Roll-off bin
7. Frequency ☐ Year ☐ Quarterly ☐ Monthly ☑ 1 time ☐ Other, Describe: 1x - many loads
8. Shipment Size: 20 - 40 yard Quantity: 1-10
9. Waste Import ☐ Yes ☑ No *If yes, complete Waste Import Supplement*

C. GENERAL MATERIAL & REGULATORY INFORMATION

1. Common name for this waste:
Test drilling cores
2. Process generating the material:
Drilling
3. Describe physical appearance and odor of the waste:
soil, rocks
4. Odor of the waste ☐ None ☑ Slight ☐ Strong 5. Physical State: ☐ Liquid ☐ Sludge/Slurry ☑ Solid
6. Describe Color: Brownish, black 7. Liquid phases: ☐ Single ☐ Double Layer ☐ Multi-layer
8. Knowledge is from ☑ Lab analysis ☐ MSDS ☑ Process/generator knowledge
9. Waste Type (US EcologyTexas customers only): ☐ Industrial ☐ Non-Industrial
10. Is the waste restricted under EPA Land Disposal Restrictions (§268) ☐ Yes ☑ No
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16. CERCLA Regulated (Superfund) Waste ☐ Yes ☑ No 17. Butadiene waste regulated by §63 Subpart XX ☐ Yes ☑ No
18. Waste contains UHC constituent(s) (§268.48), above a treatment standard, other than those for which the waste exhibits a characteristic. (If "yes", list all UHC's in Section D) ☐ Yes ☑ No
19. Waste exempt from definition of "solid waste" or "hazardous waste" (If "Yes", list reference 40CFR _______) ☐ Yes ☑ No

20. State Waste Codes	None					
21. RCRA Waste Codes	None					

22. Source Code: G_______ 23. Form Code: W_______ 24. Management Code: H_______

D. MATERIAL COMPOSITION

Values are: ☐ TCLP ☑ TOTALS — Range total ≥ 100%

Constituent	Units	Typical	Min	Max
Rocks, sand, soil	%			100

E. WASTE CHARACTERISTICS

1.	Oxidizer	☐ Yes	☑ No	9.	Reactive sulfides ________ppm	☐ Yes	☑ No
2.	Explosive	☐ Yes	☑ No	10.	Reactive cyanides________ppm	☐ Yes	☑ No
3.	Organic peroxide	☐ Yes	☑ No	11.	Water/air reactive	☐ Yes	☑ No
4.	Shock sensitive	☐ Yes	☑ No	12.	Thermally unstable	☐ Yes	☑ No
5.	Tires	☐ Yes	☑ No	13.	TSCA regulated PCB waste *(control sheet required with shipment)*	☐ Yes	☑ No
6.	Pyrophoric	☐ Yes	☑ No	14.	Medical/infectious waste	☐ Yes	☑ No
7.	Compressed gas	☐ Yes	☑ No	15.	Radioactive (*If yes, complete Profile Addendum for Radioactive Waste)*	☐ Yes	☑ No
8.	Halogenated organics	☐ Yes	☑ No				

16. Possibility of incidental liquids from transportation? ☐ Yes ☑ No

17. Is waste a solid using the paint filter test? ☑ Yes (solid) ☐ No (not solid)

18. pH Range _______to _______ Typical N/A ☐ ≤ 2 ☐ 2 < 12.5 ☐ ≥ 12.5

19. Flash Point N/A º F ☐ < 140 º F

F. GENERATOR'S CERTIFICATION

☑ Yes ☐ No I certify this material may be disposed without further treatment.

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Print Name	Signature	Title	Date

Enviro - Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: August 28, 2014

Mr. Gary Eaker
North State Environmental
1045 W. Rialto Avenue
Rialto, CA 92376
(909)875-9288 Fax(909)421-7039

Project: **Burns + McDonnel Engineering Company**
Location: **400 Oyster Point Blvd., South San Francisco, CA 94080**
Lab I.D.: **140825-11**

Dear Mr. Eaker:

The **analytical results** for the sludge sample, received by our laboratory on August 25, 2014, are attached. The sample was received chilled, intact, and accompanying chain of custody.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

Curtis Desilets
Vice President/Program Manager

Andy Wang
Laboratory Manager

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **North State Environmental**
1045 W. Rialto Avenue
Rialto, CA 92376
(909)875-9288 Fax(909)421-7039

PROJECT: **Burns + McDonnel Engineering Company**
LOCATION: **400 Oyster Point Blvd., South San Francisco, CA 94080**
DATE SAMPLED: 08/21/14 DATE RECEIVED: 08/25/14
MATRIX: SLUDGE DATE ANALYZED: 08/26/14
REPORT TO: MR. GARY EAKER DATE REPORTED: 08/28/14

SAMPLE I.D.: **WP-01** LAB I.D.: 140825-11

TOTAL THRESHOLD LIMIT CONCENTRATION (TTLC) ANALYSIS
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	TTLC LIMIT	STLC LIMIT	EPA METHOD
Antimony(Sb)	ND	0.400	1	500	15	6010B
Arsenic(As)	0.860	0.200	1	500	5.0	6010B
Barium(Ba)	13.6	2.00	1	10,000	100	6010B
Beryllium(Be)	ND	0.200	1	75	0.75	6010B
Cadmium(Cd)	ND	0.200	1	100	1.0	6010B
Chromium(Cr), Total	2.26	0.200	1	2,500	560/5@	6010B
Chromium VI (Cr6)	--	0.010	-	500	5.0	7196A
Cobalt(Co)	0.893	0.400	1	8,000	80	6010B
Copper(Cu)	1.56	0.400	1	2,500	25	6010B
Lead(Pb)	2.12	0.200	1	1,000	5.0	6010B
Mercury(Hg)	ND	0.002	1	20	0.2	7470A
Molybdenum(Mo)	ND	2.00	1	3,500	350	6010B
Nickel(Ni)	1.15	1.00	1	2,000	20	6010B
Selenium(Se)	ND	0.400	1	100	1.0	6010B
Silver(Ag)	ND	0.400	1	500	5.0	6010B
Thallium(Tl)	ND	0.400	1	700	7.0	6010B
Vanadium(V)	7.07	2.00	1	2,400	24	6010B
Zinc(Zn)	7.87	0.200	1	5,000	250	6010B

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
@ = Must meet both the STLC Limit at 560 and EPA-TCLP Limit at 5
* = STLC analysis for the metal recommended (if marked)
** = Additional Analysis required, please call to discuss (if marked)
*** = The concentration exceeds the TTLC Limit, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)
-- = Not analyzed/not requested

Data Reviewed and Approved by: ____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 1 Week (Standard)
Other:

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	Analysis Required: Cam (17 metals)									Misc.	COMMENTS
WP-01	140825-11	8-21-14	1604	Sludg	1	98	None	X										

C/O Mr. Gary @ North State.

Company Name: Burns + McDonnel Engineering Company

Address: 400 oyster Point Blvd #533

City/State/Zip: South San Francisco, CA 94080

Project Contact: Simon Barber

Tel: 650-808-7503

Fax: 650-871-2926

Sampler's Signature: Jim Barber

Project Name/ID: Soda Mt.

Relinquished by:	Received by:	Date & Time:
Jim Barber	WP	8/25/14 1200

Instructions for Sample Storage After Analysis:
O Dispose of O Return to Client X Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

WHITE WITH SAMPLE - YELLOW TO CLIENT

Date: 8/22/14

Page 1 of 1

Northern California
ACCUTEST
LABORATORIES

10/01/14

Technical Report for

Burns and McDonnell Engineering

Panorama Soda Mountain Solar Project.

77511

Accutest Job Number: C36107

Sampling Date: 09/17/14

Report to:

Burns and McDonnell Engineering
400 Oyster Point Blvd Suite 533
South San Francisco, CA 94080
sbarber@burnsmcd.com

ATTN: Simon Barber

Total number of pages in report: **36**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

James J. Rhudy
Lab Director

Client Service contact: Nutan Kabir 408-588-0200

Certifications: CA (ELAP 2910) AK (UST-092) AZ (AZ0762) NV (CA00150) OR (CA300006) WA (C925) DoD ELAP (L-A-B L2242)

Table of Contents

-1-

Section 1: Sample Summary 3
Section 2: Summary of Hits 4
Section 3: Sample Results 5
3.1: C36107-1: OW-01 6
3.2: C36107-1A: OW-01 8
Section 4: Misc. Forms 10
4.1: Chain of Custody 11
Section 5: GC Semi-volatiles - QC Data Summaries 13
5.1: Method Blank Summary 14
5.2: Blank Spike/Blank Spike Duplicate Summary 15
5.3: Matrix Spike/Matrix Spike Duplicate Summary 16
Section 6: Metals Analysis - QC Data Summaries 17
6.1: Prep QC MP8416: Ca,Mg,K,Na 18
Section 7: General Chemistry - QC Data Summaries 23
7.1: Method Blank and Spike Results Summary 24
7.2: Blank Spike Duplicate Results Summary 25
7.3: Duplicate Results Summary 26
7.4: Matrix Spike Results Summary 27
7.5: Matrix Spike Duplicate Results Summary 28
Section 8: Misc. Forms (Accutest Laboratories Southeast, Inc.) 29
8.1: Chain of Custody 30
Section 9: GC Semi-volatiles - QC Data (Accutest Laboratories Southeast, Inc.) 33
9.1: Method Blank Summary 34
9.2: Blank Spike Summary 35
9.3: Matrix Spike/Matrix Spike Duplicate Summary 36

Sample Summary

Burns and McDonnell Engineering

Job No: C36107

Panorama Soda Mountain Solar Project.
Project No: 77511

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
C36107-1	09/17/14	18:12	SB	09/20/14	AQ	Ground Water	OW-01
C36107-1A	09/17/14	18:12	SB	09/20/14	AQ	Ground Water	OW-01

Summary of Hits

Job Number: C36107
Account: Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.
Collected: 09/17/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C36107-1	**OW-01**					

No hits reported in this sample.

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C36107-1A	**OW-01**					
Calcium		34700	5000		ug/l	SW846 6010B
Magnesium		6690	5000		ug/l	SW846 6010B
Sodium		346000	10000		ug/l	SW846 6010B
Alkalinity, Bicarbonate		83.6	5.0		mg/l	SM2320 B-97
Alkalinity, Total as CaCO3		83.6	5.0		mg/l	SM2320 B-97
Chloride		292	25		mg/l	EPA 300/SW846 9056A
Nitrogen, Nitrate + Nitrite		2.6	1.0		mg/l	SM4500-NO3 E-00
Solids, Total Dissolved		1140	10		mg/l	SM2540 C-97
Sulfate		369	25		mg/l	EPA 300/SW846 9056A

Northern California
ACCUTEST
LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	OW-01		
Lab Sample ID:	C36107-1	**Date Sampled:**	09/17/14
Matrix:	AQ - Ground Water	**Date Received:**	09/20/14
Method:	SW846 8081A SW846 3510C	**Percent Solids:**	n/a
Project:	Panorama Soda Mountain Solar Project.		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MM024507.D	1	09/22/14	RV	09/22/14	OP10798	GMM724
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

Pesticide PPL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0097	0.0019	ug/l	
319-84-6	alpha-BHC	ND	0.0097	0.0025	ug/l	
319-85-7	beta-BHC	ND	0.0097	0.0044	ug/l	
319-86-8	delta-BHC	ND	0.0097	0.0032	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0097	0.0024	ug/l	
12789-03-6	Chlordane	ND	0.097	0.0097	ug/l	
60-57-1	Dieldrin	ND	0.0097	0.0020	ug/l	
72-54-8	4,4'-DDD	ND	0.0097	0.0022	ug/l	
72-55-9	4,4'-DDE	ND	0.0097	0.0029	ug/l	
50-29-3	4,4'-DDT	ND	0.0097	0.0023	ug/l	
72-20-8	Endrin	ND	0.0097	0.0031	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0097	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0097	0.0023	ug/l	
33213-65-9	Endosulfan-II	ND	0.0097	0.0021	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0097	0.0024	ug/l	
76-44-8	Heptachlor	ND	0.0097	0.0027	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0097	0.0034	ug/l	
72-43-5	Methoxychlor	ND	0.0097	0.0019	ug/l	
8001-35-2	Toxaphene	ND	0.19	0.058	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	102%		40-114%
877-09-8	Tetrachloro-m-xylene	97%		40-114%
2051-24-3	Decachlorobiphenyl	104%		46-128%
2051-24-3	Decachlorobiphenyl	106%		46-128%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	OW-01			
Lab Sample ID:	C36107-1		**Date Sampled:**	09/17/14
Matrix:	AQ - Ground Water		**Date Received:**	09/20/14
Method:	SW846 8151A SW846 8151A		**Percent Solids:**	n/a
Project:	Panorama Soda Mountain Solar Project.			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	CC045786.D	1	09/30/14	AFL	09/29/14	F:OP53320	F:GCC737
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	5.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	0.48	0.087	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.048	0.014	ug/l	
93-76-5	2,4,5-T	ND	0.048	0.014	ug/l	
1918-00-9	Dicamba	ND	0.048	0.013	ug/l	
88-85-7	Dinoseb	ND	0.95	0.24	ug/l	
75-99-0	Dalapon	ND	1.2	0.48	ug/l	
120-36-5	Dichloroprop	ND	0.48	0.10	ug/l	
94-82-6	2,4-DB	ND	0.48	0.16	ug/l	
93-65-2	MCPP	ND	48	6.1	ug/l	
94-74-6	MCPA	ND	48	10	ug/l	
87-86-5	Pentachlorophenol	ND	0.048	0.011	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	74%		33-145%

(a) Sample extracted beyond hold time. Analysis performed at Accutest Laboratories, Orlando FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	OW-01		
Lab Sample ID:	C36107-1A	**Date Sampled:**	09/17/14
Matrix:	AQ - Ground Water	**Date Received:**	09/20/14
		Percent Solids:	n/a
Project:	Panorama Soda Mountain Solar Project.		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	34700	5000	ug/l	1	09/23/14	09/23/14	RS	SW846 6010B [1]	SW846 3010A [2]
Magnesium	6690	5000	ug/l	1	09/23/14	09/23/14	RS	SW846 6010B [1]	SW846 3010A [2]
Potassium	< 10000	10000	ug/l	1	09/23/14	09/23/14	RS	SW846 6010B [1]	SW846 3010A [2]
Sodium	346000	10000	ug/l	1	09/23/14	09/23/14	RS	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA4258
(2) Prep QC Batch: MP8416

RL = Reporting Limit

Report of Analysis

Client Sample ID: OW-01
Lab Sample ID: C36107-1A
Matrix: AQ - Ground Water
Date Sampled: 09/17/14
Date Received: 09/20/14
Percent Solids: n/a
Project: Panorama Soda Mountain Solar Project.

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	83.6	5.0	mg/l	1	09/23/14 10:00	DQ	SM2320 B-97
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	09/23/14 10:00	DQ	SM2320 B-97
Alkalinity, Total as CaCO3	83.6	5.0	mg/l	1	09/23/14 10:00	DQ	SM2320 B-97
Chloride	292	25	mg/l	50	09/23/14 16:43	RL	EPA 300/SW846 9056A
Nitrogen, Nitrate + Nitrite	2.6	1.0	mg/l	10	09/24/14 15:01	RL	SM4500-NO3 E-00
Solids, Total Dissolved	1140	10	mg/l	1	09/22/14 16:00	DQ	SM2540 C-97
Sulfate	369	25	mg/l	50	09/23/14 16:43	RL	EPA 300/SW846 9056A

RL = Reporting Limit

Northern California
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Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Burns & McDonnell SINCE 1898

03082011 Form WCD-KC1-SDO

Request for Chemical Analysis and Chain of Custody Record

C36107

Burns & McDonnell Engineering
400 Oyster Point Blvd. Suite 533
South San Francisco, CA 94080
Phone: (650) 871-2926 Fax: (650) 871-2653
Attention: Simon Barber

Laboratory: accutest
Address: 2105 lundy ave
City/State/Zip: San Jose, ca 95131
Telephone: 408-588-0200

Document Control No: 1 of 1
Lab. Reference No. or Episode No.:

Project Number: 77511
Client Name: Panorama. Solar Mountain Solar

Group or SWMU Name	Sample Point	Sample Designator	Round	Year	Depth From	Depth To	Date	Time	Liquid	Solid	Gas	Number of Containers	TDS 160.1	Total Nitrate/Nitrite (2) 300.0	Carbonate/Bicarbonate	Alkalinity SM2320B	Sulfate, Chloride 300.0	Calcium, Magnesium	Sodium, Potassium 6010	Pesticides/herbicides	Remarks
1	ow-01	ow-01	Sept	2014			9.13	1812	W			5	X	X	X	X	X	X	X	X	

FEDEX TRK# 8050 5131 1445

Sampler (signature): Simon Barber
Sampler (signature):

Special Instructions: Standard turnaround

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
1. [signature]	9-19-14/0545	[signature]	9-19-14 1105
2. [signature]	9-19-14 1530	[signature]	9/20/14 0847

Ice Present in Container: Yes [X] No [ ]
Temperature Upon Receipt: °C 4.9-0.1 = 4.8°C

Laboratory Comments: Custody Seal Intact

IRVINE

ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: C36107 **Client:** BURNS & MCDONNELL **Project:** PANORAMA

Date / Time Received: 9/20/2014 8:47:00 AM **Delivery Method:** FedEx **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (4.9/4.8);

Cooler Security

	Y	N
1. Custody Seals Present:	☑	☐
2. Custody Seals Intact:	☑	☐
3. COC Present:	☑	☐
4. Smpl Dates/Time OK	☑	☐

Cooler Temperature

	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR2;	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control_Preservation

	Y	N	N/A
1. Trip Blank present / cooler:	☐	☐	☑
2. Trip Blank listed on COC:	☐	☐	☑
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☐	☑

Sample Integrity - Documentation

	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition

	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions

	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

C36107: Chain of Custody
Page 2 of 2

Northern California ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: C36107
Account: BMECASF Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10798-MB	MM024508A.D	1	09/22/14	RV	09/22/14	OP10798	GMM724

The QC reported here applies to the following samples: **Method:** SW846 8081A

C36107-1

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.010	0.0020	ug/l	
319-84-6	alpha-BHC	ND	0.010	0.0026	ug/l	
319-85-7	beta-BHC	ND	0.010	0.0045	ug/l	
319-86-8	delta-BHC	ND	0.010	0.0033	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.010	0.0025	ug/l	
12789-03-6	Chlordane	ND	0.10	0.010	ug/l	
60-57-1	Dieldrin	ND	0.010	0.0021	ug/l	
72-54-8	4,4'-DDD	ND	0.010	0.0023	ug/l	
72-55-9	4,4'-DDE	ND	0.010	0.0030	ug/l	
50-29-3	4,4'-DDT	ND	0.010	0.0024	ug/l	
72-20-8	Endrin	ND	0.010	0.0032	ug/l	
7421-93-4	Endrin aldehyde	ND	0.010	0.0042	ug/l	
959-98-8	Endosulfan-I	ND	0.010	0.0024	ug/l	
33213-65-9	Endosulfan-II	ND	0.010	0.0022	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.010	0.0025	ug/l	
76-44-8	Heptachlor	ND	0.010	0.0028	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.010	0.0035	ug/l	
72-43-5	Methoxychlor	ND	0.010	0.0020	ug/l	
8001-35-2	Toxaphene	ND	0.20	0.060	ug/l	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	80%	40-114%
877-09-8	Tetrachloro-m-xylene	91%	40-114%
2051-24-3	Decachlorobiphenyl	100%	46-128%
2051-24-3	Decachlorobiphenyl	98%	46-128%

Blank Spike/Blank Spike Duplicate Summary

Job Number: C36107
Account: BMECASF Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10798-BS	MM024509A.D1		09/22/14	RV	09/22/14	OP10798	GMM724
OP10798-BSD	MM024510A.D1		09/22/14	RV	09/22/14	OP10798	GMM724

The QC reported here applies to the following samples: **Method:** SW846 8081A

C36107-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
309-00-2	Aldrin	0.1	0.085	85	0.076	76	11	46-110/22
319-84-6	alpha-BHC	0.1	0.092	92	0.085	85	8	39-111/32
319-85-7	beta-BHC	0.1	0.093	93	0.085	85	9	38-121/31
319-86-8	delta-BHC	0.1	0.11	110	0.097	97	13	37-114/33
58-89-9	gamma-BHC (Lindane)	0.1	0.094	94	0.087	87	8	38-121/31
60-57-1	Dieldrin	0.1	0.10	100	0.092	92	8	46-127/22
72-54-8	4,4'-DDD	0.1	0.11	110	0.095	95	15	50-121/22
72-55-9	4,4'-DDE	0.1	0.10	100	0.087	87	14	48-120/23
50-29-3	4,4'-DDT	0.1	0.12	120	0.10	100	18	44-121/22
72-20-8	Endrin	0.1	0.11	110	0.10	100	10	55-135/24
7421-93-4	Endrin aldehyde	0.1	0.11	110	0.095	95	15	37-120/27
959-98-8	Endosulfan-I	0.1	0.096	96	0.089	89	8	47-123/24
33213-65-9	Endosulfan-II	0.1	0.11	110	0.099	99	11	49-123/23
1031-07-8	Endosulfan sulfate	0.1	0.13	130* [a]	0.12	120	8	47-122/27
76-44-8	Heptachlor	0.1	0.13	130	0.11	110	17	58-137/23
1024-57-3	Heptachlor epoxide	0.1	0.097	97	0.089	89	9	51-117/23
72-43-5	Methoxychlor	0.1	0.12	120	0.10	100	18	50-129/24

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
877-09-8	Tetrachloro-m-xylene	88%	82%	40-114%
877-09-8	Tetrachloro-m-xylene	98%	90%	40-114%
2051-24-3	Decachlorobiphenyl	108%	95%	46-128%
2051-24-3	Decachlorobiphenyl	106%	94%	46-128%

(a) Outside of in-house control limits; but within the method control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C36107
Account: BMECASF Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10798-MS	MM024536.D	20	09/23/14	RV	09/23/14	OP10798	GMM725
OP10798-MSD	MM024537.D	20	09/23/14	RV	09/23/14	OP10798	GMM725
C36132-9 [a]	MM024535.D	5	09/23/14	RV	09/23/14	OP10798	GMM725

The QC reported here applies to the following samples: **Method:** SW846 8081A

C36107-1

CAS No.	Compound	C36132-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
309-00-2	Aldrin	0.049	U	0.105	0.066	63	0.105	0.068	65	3	46-110/22
319-84-6	alpha-BHC	0.049	U	0.105	0.065	62	0.105	0.065	62	0	39-111/32
319-85-7	beta-BHC	0.049	U	0.105	ND	80	0.105	ND	72	10	38-121/31
319-86-8	delta-BHC	0.049	U	0.105	0.074	70	0.105	ND	65	8	37-114/33
58-89-9	gamma-BHC (Lindane)	0.049	U	0.105	0.070	67	0.105	0.070	67	0	38-121/31
60-57-1	Dieldrin	0.049	U	0.105	0.077	73	0.105	0.082	78	6	46-127/22
72-54-8	4,4'-DDD	0.027	J	0.105	0.10	69	0.105	0.10	69	0	36-103/16
72-55-9	4,4'-DDE	0.049	U	0.105	0.069	66	0.105	0.071	67	3	40-104/14
50-29-3	4,4'-DDT	0.049	U	0.105	0.061	58	0.105	0.065	62	6	37-96/14
72-20-8	Endrin	0.049	U	0.105	0.086	82	0.105	0.088	84	2	55-135/24
7421-93-4	Endrin aldehyde	0.049	U	0.105	0.093	88	0.105	0.092	87	1	37-120/27
959-98-8	Endosulfan-I	0.049	U	0.105	0.087	83	0.105	0.090	86	3	47-123/24
33213-65-9	Endosulfan-II	0.049	U	0.105	0.088	84	0.105	0.094	89	7	49-123/23
1031-07-8	Endosulfan sulfate	0.049	U	0.105	0.11	105	0.105	0.11	105	0	47-122/27
76-44-8	Heptachlor	0.049	U	0.105	0.082	78	0.105	0.078	74	5	58-137/23
1024-57-3	Heptachlor epoxide	0.049	U	0.105	0.079	75	0.105	0.080	76	1	51-117/23
72-43-5	Methoxychlor	0.049	U	0.105	0.090	86	0.105	0.075	71	18	50-129/24

CAS No.	Surrogate Recoveries	MS	MSD	C36132-9	Limits
877-09-8	Tetrachloro-m-xylene	67%	69%	62%	40-114%
877-09-8	Tetrachloro-m-xylene	69%	74%	71%	40-114%
2051-24-3	Decachlorobiphenyl	90%	89%	97%	46-128%
2051-24-3	Decachlorobiphenyl	94%	94%	97%	46-128%

(a) Reporting Limits raised due to high concentration of non-target compounds (hydrocarbons). Shot at a lower reporting limit but CCV's failed due to carry-over.

* = Outside of Control Limits.

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Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

QC Batch ID: MP8416
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/23/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	13	8.5		
Antimony	6.0	.7	.51		
Arsenic	10	.7	.65		
Barium	200	.4	.35		
Beryllium	5.0	.2	.4		
Boron	100	.9	.64		
Cadmium	2.0	.2	.15		
Calcium	5000	7.1	12	9.7	<5000
Chromium	10	.3	.41		
Cobalt	5.0	.2	.3		
Copper	10	1.2	3		
Iron	200	6.4	12		
Lead	10	.7	.85		
Lithium	50		2		
Magnesium	5000	27	36	-0.30	<5000
Manganese	15	.1	1.3		
Molybdenum	20	.2	.22		
Nickel	5.0	.2	.12		
Potassium	10000	18	44	-53	<10000
Selenium	10	1.8	2.2		
Silicon	100	1.2	6.9		
Silver	5.0	.3	.47		
Sodium	10000	15	13	27.3	<10000
Strontium	10	.2	.24		
Thallium	10	.5	.54		
Tin	50	.2	.7		
Titanium	10	.4	.34		
Vanadium	10	.3	.3		
Zinc	20	.3	4.2		

Associated samples MP8416: C36107-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

QC Batch ID: MP8416
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/23/14

Metal	C36094-2F Original	MS	Spikelot MPIR5	% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium	66500	78400	12500	95.2	75-125
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron					
Lead	anr				
Lithium					
Magnesium	47600	59900	12500	98.4	75-125
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Potassium	3990	9110	5000	102.4	75-125
Selenium	anr				
Silicon					
Silver	anr				
Sodium	125000	134000	12500	72.0 (a)	75-125
Strontium					
Thallium	anr				
Tin					
Titanium					
Vanadium	anr				
Zinc	anr				

Associated samples MP8416: C36107-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

QC Batch ID: MP8416
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/23/14

Metal	C36094-2F Original	MSD	Spikelot MPIR5	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium	66500	77000	12500	84.0	1.8	20
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron						
Lead	anr					
Lithium						
Magnesium	47600	59400	12500	94.4	0.8	20
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Potassium	3990	8990	5000	100.0	1.3	20
Selenium	anr					
Silicon						
Silver	anr					
Sodium	125000	132000	12500	56.0 (a)	1.5	20
Strontium						
Thallium	anr					
Tin						
Titanium						
Vanadium	anr					
Zinc	anr					

Associated samples MP8416: C36107-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

QC Batch ID: MP8416
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/23/14

Metal	BSP Result	Spikelot MPIR5	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium	13300	12500	106.4	80-120
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron				
Lead	anr			
Lithium				
Magnesium	13400	12500	107.2	80-120
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Potassium	5280	5000	105.6	80-120
Selenium	anr			
Silicon				
Silver	anr			
Sodium	13000	12500	104.0	80-120
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP8416: C36107-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

QC Batch ID: MP8416
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/23/14

Metal	C36094-2F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium	66500	77300	16.3*(a)	0-10
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron				
Lead	anr			
Lithium				
Magnesium	47600	54800	15.1*(a)	0-10
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Potassium	3990	4480	12.2*(a)	0-10
Selenium	anr			
Silicon				
Silver	anr			
Sodium	125000	142000	14.0*(a)	0-10
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP8416: C36107-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

Northern California ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN14539	5.0	0.0	mg/l	250	253	101.2	75-125%
Chloride	GP6846/GN14547	0.50	0.0	mg/l	5	4.90	98.0	90-110%
Fluoride	GP6846/GN14547	0.10	0.0	mg/l	5	4.68	93.6	90-110%
Nitrogen, Nitrate	GP6846/GN14547	0.10	0.0	mg/l	5	4.81	96.2	90-110%
Nitrogen, Nitrate + Nitrite	GN14553	0.10	0.0	mg/l	0.2	0.20	98.0	85-115%
Nitrogen, Nitrite	GP6846/GN14547	0.10	0.0	mg/l	5	4.67	93.4	90-110%
Solids, Total Dissolved	GN14533	10	0.0	mg/l				
Sulfate	GP6846/GN14547	0.50	0.0	mg/l	5	5.01	100.2	90-110%

Associated Samples:
Batch GP6846: C36107-1A
Batch GN14533: C36107-1A
Batch GN14539: C36107-1A
Batch GN14553: C36107-1A
(*) Outside of QC limits

BLANK SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN14539	mg/l	250	257	1.6	
Chloride	GP6846/GN14547	mg/l	5	4.94	0.8	25%
Fluoride	GP6846/GN14547	mg/l	5	4.67	0.2	25%
Nitrogen, Nitrate	GP6846/GN14547	mg/l	5	4.81	0.0	25%
Nitrogen, Nitrate + Nitrite	GN14553	mg/l	0.2	0.20	1.0	
Nitrogen, Nitrite	GP6846/GN14547	mg/l	5	4.69	0.4	25%
Sulfate	GP6846/GN14547	mg/l	5	5.02	0.2	25%

Associated Samples:
Batch GP6846: C36107-1A
Batch GN14539: C36107-1A
Batch GN14553: C36107-1A
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN14539	C36071-1	mg/l	243	241	0.8	0-25%
Solids, Total Dissolved	GN14533	C36047-4	mg/l	769	771	0.3	0-10%

Associated Samples:
Batch GN14533: C36107-1A
Batch GN14539: C36107-1A
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP6846/GN14547	C36119-1	mg/l	21.7	25	46.2	98.0	80-120%
Fluoride	GP6846/GN14547	C36119-1	mg/l	0.16	25	24.0	95.4	80-120%
Nitrogen, Nitrate	GP6846/GN14547	C36119-1	mg/l	4.4	25	28.0	94.4	80-120%
Nitrogen, Nitrate + Nitrite	GN14553	C35964-1	mg/l	0.19	0.2	0.38	97.2	75-125%
Nitrogen, Nitrite	GP6846/GN14547	C36119-1	mg/l	0.18	25	23.4	92.9	80-120%
Sulfate	GP6846/GN14547	C36119-1	mg/l	37.9	25	60.9	92.0	80-120%

Associated Samples:
Batch GP6846: C36107-1A
Batch GN14553: C36107-1A
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C36107
Account: BMECASF - Burns and McDonnell Engineering
Project: Panorama Soda Mountain Solar Project.

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GP6846/GN14547	C36119-1	mg/l	21.7	25	46.2	0.0	
Fluoride	GP6846/GN14547	C36119-1	mg/l	0.16	25	24.0	0.0	
Nitrogen, Nitrate	GP6846/GN14547	C36119-1	mg/l	4.4	25	28.0	0.0	
Nitrogen, Nitrate + Nitrite	GN14553	C35964-1	mg/l	0.19	0.2	0.37	2.7	
Nitrogen, Nitrite	GP6846/GN14547	C36119-1	mg/l	0.18	25	23.6	0.9	
Sulfate	GP6846/GN14547	C36119-1	mg/l	37.9	25	61.0	0.2	

Associated Samples:
Batch GP6846: C36107-1A
Batch GN14553: C36107-1A
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Northern California ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest Laboratories Southeast, Inc.)

Includes the following where applicable:

- Chain of Custody

ACCUTEST LABORATORIES

Accutest ID and PO#: C36107

2105 Lundy Avenue, San Jose, CA 95131 Phone :(408)588-0200 Fax: (408)588-0201

Subcontract Chain of Custody

Subcontract Lab: Accutest Laboratories Southeast
Date Sent: 09/22/2014
Date Due: 09/29/2014

Project Name: BMECASF6439
Project Location:

Accutest Lab Number	Customer Sample Name/Field Point ID	Matrix	Method	Collect Date	Collect Time
C36107-1		GW	H8151FL		

Comments: 1 x 1L Unpreserved Amber

Relinquished By: Maureen C.	Received By: FedEx	Date: 09/22/14	Time: 15:00
Relinquished By: FX	Received By: J. Coxxe (Alse)	Date: 9-24-14	Time: 09:20
Relinquished By:	Received By:	Date:	Time:

3.6

Page 1

Send the Report to: nutank@accutest.com

8 8.1

C36107: Chain of Custody
Page 1 of 3
Accutest Laboratories Southeast, Inc.

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: C36107 CLIENT: ALNC PROJECT: DMECASF 6439

DATE/TIME RECEIVED: 9-24-14 09:30 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 7712 3580 9809

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [x] TRIP BLANK NOT PROVIDED
- [x] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM____ 5-GRAM____

NUMBER OF 5035 FIELD KITS ? ____

NUMBER OF LAB FILTERED METALS ? ____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 3.2
- [ ] CORRECTED TEMPS: 3.6

SAMPLE INFORMATION

- [x] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT

{APPICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS: RECEIVED 1 AMBER (8151)

TECHNICIAN SIGNATURE/DATE JC 9-24-14 REVIEWER SIGNATURE/DATE RW 09-24-14

RS 04/14

receipt confirmation 041514.xls

8.1

8

C36107: Chain of Custody

Page 2 of 3

2105 LUNDY AVE

SAN JOSE, CA 95131
UNITED STATES US

CAD: 10469559

BILL RECIPIENT

TO SAMPLE MANAGEMENT
ACCUTEST LABORATORIES SOUTHEAST
4405 VINELAND ROAD

ORLANDO FL 32811
(407) 425-6700 REF: C36107
INV:
PO: DEPT:

FedEx
Express

E

TUE - 23 SEP 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7712 3580 2809

XH TIXA

32811
FL-US MCO

8.1

8

C36107: Chain of Custody
Page 3 of 3

Northern California ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

(Accutest Laboratories Southeast, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: C36107
Account: ALNCA Accutest Northern California, Inc.
Project: BMECASF: Panorama Soda Mountain Solar Project.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP53320-MB	CC045785.D	1	09/30/14	MRE	09/29/14	OP53320	GCC737

The QC reported here applies to the following samples: **Method:** SW846 8151A

C36107-1

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	0.50	0.091	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.050	0.015	ug/l	
93-76-5	2,4,5-T	ND	0.050	0.014	ug/l	
1918-00-9	Dicamba	ND	0.050	0.014	ug/l	
88-85-7	Dinoseb	ND	1.0	0.25	ug/l	
75-99-0	Dalapon	ND	1.3	0.50	ug/l	
120-36-5	Dichloroprop	ND	0.50	0.11	ug/l	
94-82-6	2,4-DB	ND	0.50	0.17	ug/l	
93-65-2	MCPP	ND	50	6.5	ug/l	
94-74-6	MCPA	ND	50	10	ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.012	ug/l	

CAS No.	Surrogate Recoveries		Limits
19719-28-9	2,4-DCAA	76%	33-145%

9.1.1

9

Blank Spike Summary

Job Number: C36107
Account: ALNCA Accutest Northern California, Inc.
Project: BMECASF: Panorama Soda Mountain Solar Project.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP53320-BS	CC045784.D	1	09/30/14	MRE	09/29/14	OP53320	GCC737

The QC reported here applies to the following samples: **Method:** SW846 8151A

C36107-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
94-75-7	2,4-D	2.5	2.0	80	69-138
93-72-1	2,4,5-TP (Silvex)	0.25	0.20	80	76-142
93-76-5	2,4,5-T	0.25	0.20	80	75-149
1918-00-9	Dicamba	0.25	0.21	84	51-150
88-85-7	Dinoseb	1.25	0.62	50	10-122
75-99-0	Dalapon	6.25	1.4	22	19-132
120-36-5	Dichloroprop	2.5	2.5	100	76-160
94-82-6	2,4-DB	2.5	1.9	76	65-145
93-65-2	MCPP	250	188	75	66-131
94-74-6	MCPA	250	187	75	64-137
87-86-5	Pentachlorophenol	0.25	0.21	84	67-137

CAS No.	Surrogate Recoveries	BSP	Limits
19719-28-9	2,4-DCAA	81%	33-145%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C36107
Account: ALNCA Accutest Northern California, Inc.
Project: BMECASF: Panorama Soda Mountain Solar Project.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP53320-MS	CC045794.D	5	09/30/14	MRE	09/29/14	OP53320	GCC737
OP53320-MSD	CC045795.D	5	09/30/14	MRE	09/29/14	OP53320	GCC737
C36123-1 [a]	CC045793.D	5	09/30/14	MRE	09/29/14	OP53320	GCC737

The QC reported here applies to the following samples: **Method:** SW846 8151A

C36107-1

CAS No.	Compound	C36123-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
94-75-7	2,4-D	ND		4.81	3.8	79	4.81	4.0	83	5	69-138/21
93-72-1	2,4,5-TP (Silvex)	ND		0.481	0.40	83	0.481	0.38	79	5	76-142/27
93-76-5	2,4,5-T	ND		0.481	0.49	102	0.481	0.51	106	4	75-149/22
1918-00-9	Dicamba	0.11	J	0.481	0.52	85	0.481	0.55	92	6	51-150/23
88-85-7	Dinoseb	ND		2.4	3.2	133*	2.4	3.7	154*	14	10-122/35
75-99-0	Dalapon	ND		12	ND	0*	12	6.3	52	200*	19-132/28
120-36-5	Dichloroprop	ND		4.81	4.6	96	4.81	4.6	96	0	76-160/21
94-82-6	2,4-DB	ND		4.81	5.6	116	4.81	5.0	104	11	65-145/26
93-65-2	MCPP	ND		481	476	99	481	428	89	11	66-131/21
94-74-6	MCPA	ND		481	370	77	481	412	86	11	64-137/28
87-86-5	Pentachlorophenol	ND		0.481	0.38	79	0.481	0.43	89	12	67-137/25

CAS No.	Surrogate Recoveries	MS	MSD	C36123-1	Limits
19719-28-9	2,4-DCAA	105%	118%	96%	33-145%

(a) All hits confirmed by dual column analysis. Dilution required due to matrix interference.

* = Outside of Control Limits.

Isotope Tracer Technologies Inc

www.it2isotopes.com

Isotope Analyses for: Burns McDonnell

IT2 FILE # 140381

2014-11-06

Mirna Stas

2014-11-06

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

δ^2H Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	δ^2H	Aver	Stdv
		Date	Time		H_2O	VSMOW	
1	PW-1	October 9, 2014	9:10	26858	X	-88.50	0.60

Insturment Used: Cavity Ring Down Spectroscopy (CRDS)- Picarro
CRDS (Model L1102-i) (Piccaro, California, USA).

2014-11-06

ISOTOPE TRACER TECHNOLOGIES INC

www.it2isotopes.com

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

$\delta^{18}O$ Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	$\delta^{18}O$	Aver	Stdv
		Date	Time		H_2O	VSMOW	
1	PW-1	October 9, 2014	9:10	26858	X	-11.18	0.05

Insturment Used: Cavity Ring Down Spectroscopy (CRDS)- Picarro
CRDS (Model L1102-i) (Piccaro, California, USA).

2014-11-06

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

E^3H Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	E^3H	Result	± 1σ
		Date	Time				
1	PW-1	October 9, 2014	9:10	26858	X	<0.8	0.7

Tritium is reported in Tritium Units.
1TU = 3.221 Picocurries/L per IAEA, 2000 Report.
1TU = 0.11919 Becquerels/L per IAEA, 2000 Report.

2014-11-06

ISOTOPE TRACER TECHNOLOGIES INC
www.it2isotopes.com

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

$\delta^{34}S$ Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	$\delta^{34}S$	Result	Repeat
		Date	Time		SO_4	VCDT	
1	PW-1	October 9, 2014	9:10	26858	X	6.3	7.1

Insturment Used: EA-IRMS MAT253 (Thermo Scientific, Germany)

2014-11-06

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

ISOTOPE TRACER TECHNOLOGIES INC
www.it2isotopes.com

^{13}C DOC Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	$\delta^{13}C$	Result	Repeat
		Date	Time		DOC	PDB	
1	PW-1	October 9, 2014	9:10	26858	X	-22.3	-22.9

Insturment Used: DeltaPlus XL IRMS (Finnigan MAT, Germany)

2014-11-06

ISOTOPE TRACER TECHNOLOGIES INC

www.it2isotopes.com

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

^{13}C DIC Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	$\delta^{13}C$	Result	Repeat
		Date	Time		DIC	PDB	
1	PW-1	October 9, 2014	9:10	26858	X	7.0	7.2

Insturment Used: DeltaPlus XL IRMS (Finnigan MAT, Germany)

2014-11-06

Client: Burns & McDonnell
One Pointe Dr., Suite 540
Brea, CA 92821
Phone (213)700-8704

Attn.: Galen Kenoyer
gkenoyer@burnsmcd.com

^{14}C DIC Analyses Results :

File Number: 140381
Project Name: Soda Mountain Solar/77511
Project No.: 89358

#	Sample ID	Collection		Sample #	^{14}C	Fraction of Modern	
		Date	Time		DIC	pmc	± 1σ
1	PW-1	October 9, 2014	9:10	26858	X	8.093	0.064

Insturment Used: Accelerator Mass Spectrometer (AMS)

Appendix K:
Biological Survey Report

PROTOCOL DESERT TORTOISE SURVEY AND MONITORING FOR SODA MOUNTAIN SOLAR WELL DRILLING PROJECT, AUGUST-OCTOBER 2014

BLM CASE NUMBER – CACA 49584

Prepared for:

Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
Attn: Chris Otahal

Prepared by:

Kiva Biological Consulting
PO Box 1210
Inyokern, CA 93527

Under Contract to:

Panorama Environmental, Inc.
One Embarcadero Center, Suite 740
San Francisco, CA 94111

November 19, 2014

1.0 INTRODUCTION

On January 10, 2008, Solenergis, LLC (Solenergis) submitted an application to the U.S. Department of the Interior, Bureau of Land Management (BLM), for a right−of−way grant to construct and operate a 350-megawatt solar electric power generating facility (Soda Mountain Project or project). The project developer is now Soda Mountain Solar, LLC, a wholly owned subsidiary of Bechtel Development Company. The project will include installation, operation, and maintenance of approximately 1.5 million photovoltaic, polycrystalline silicon solar panels. The proposed project site is on federal lands managed by BLM. The project area is located approximately 6 miles southwest of Baker, California, along Interstate 15 (I−15) in San Bernardino County (Figure 1). The current project right−of−way area is 4,559 acres. Approximately 3,000 acres (66 percent) of the 4,559-acre project site would be occupied by the project's solar array fields and related facilities. The remaining 1,559 acres will be utilized for stormwater control, access roads, ancillary buildings, and reserve land.

The current project was to assess the study site for Agassiz's desert tortoise (*Gopherus agassizii*) and other sensitive species. A temporary tortoise-proof fence was constructed, two wells were drilled and developed, a well test was conducted, and tortoise-proof fence was removed between August 12 and October 10, 2014.

The work described herein was performed in accordance with the June 23, 2014, *Biological Workplan, Soda Mountain Solar Well Drilling* (Kiva 2014), which was approved by BLM on July 7, 2014.

2.0 PROJECT SITE DESCRIPTION

The work site is approximately 1 acre in size and located at the north end of the Soda Mountain Solar site adjacent to Blue Bell Mine Road (Figure 2).

The work site is within the range of the desert tortoise, in creosote bush scrub that has annual precipitation between 5 to 20 centimeters, an elevation between 100 to 1,525 meters above mean sea level, and friable soils for burrow construction. The work site is near the western boundary of the Northeast Mojave South Recovery Unit.

3.0 METHODS

Peter Woodman conducted a U.S. Fish and Wildlife Service (FWS) 100% coverage protocol desert tortoise survey both on the 1-acre work site and within an adjacent 150-meter buffer on August 12, 2014 (study area).

Transects on the work site were walked at 5-meter intervals within FWS protocol temperatures (below 40 degrees Celsius). All sensitive species sign, including desert tortoise, badger (*Taxidea taxus*), coyote (*Canis latrans*), desert kit fox (*Vulpes macrotis*), burrowing owl (*Athene cunicularia*), Mojave fringe-toed lizard (*Uma scoparia*), and bighorn sheep (*Ovis canadensis*), was recorded on data forms. All potential tortoise burrows were inspected with flashlights or using sunlight reflected down the tunnels with a mirror to inspect each tunnel until the end was observed or the tunnel turned and could not be inspected. A probe was not used to assist with determination of presence of a tortoise. If the end of a burrow could not be observed then absence of desert tortoise could not be determined. Protocol tortoise surveys were also walked at 10-meter intervals within a 150-meter-wide buffer around the entire work site. The survey in the buffer area was conducted for burrowing owls but tortoise survey protocols were followed.

After completion of the clearance survey a temporary tortoise-proof fence was constructed around the 1-acre work site. Woodman was present during construction of the fence. Woodman also conducted the protocol clearance survey of the work site after completion of the fence installation. During well drilling, weekly visits were made to inspect the site and fence. A biological monitor was present throughout well testing. After completion of the project and removal of the fence, a biological monitor inspected the entire site.

4.0 RESULTS

Habitat Assessment

The study area is sparsely vegetated and includes two vegetation communities/land types: creosote bush-white bursage scrub and Mojave desert wash. Community/land types are based on dominant vegetation composition and density observed during field surveys of the study area. Soils within the study area are dominated by sands and cobbles. The alluvial fans within the study area include gravelly soils with boulders and steep slopes. There is some desert pavement development near the project site. Due to its lack of cover and forage, desert pavement may not be commonly utilized by tortoises for burrowing; however tortoises do burrow in washes on the periphery of desert pavement areas. Washes in the work site were small and tortoise sign was not observed.

Suitable habitat for desert tortoise was identified for the *Draft Desert Renewable Energy Conservation Plan Baseline Biology Study* (CEC 2012) through a GIS model that built on the results of the model developed by Nussear et al. (2009). Potential suitable habitat was first defined in this model as those areas with a predicted probability of desert tortoise habitat suitability of 0.6 or greater.

The region around the study area has a Suitability Index of 0.6 to 0.8 (Nussear et al. 2009) indicating it is suitable habitat for desert tortoise. Habitat, soils, and the Suitability Index from Nussear et al. (2009) indicate desert tortoises should be present within the study area. The Suitability Index correctly predicted the presence of tortoises on the larger 4,559-acre project site but surveys conducted by URS (2009) and Kiva Biological Consulting (2013) indicate that few tortoise are present. Kiva Biological Consulting (2013) found one live tortoise and 15 burrows on the south side of I-15, about 3 kilometers south of the work site, but no live tortoises north of the freeway. Several kilometers to the northeast of the work site AMEC (2001) reported five tortoise burrows, three rock shelters, nine tortoise scat, and two carcass fragments within a 165-acre study area.

Desert Tortoise Sign

No live desert tortoise or tortoise sign were found on or near the work site during the preconstruction survey, clearance survey, nor during performance of project activities. Substrate at the site is generally large (up to cobble-size), which is typically indicative of lower tortoise densities. In addition, no live tortoises nor tortoise sign were observed on the study area.

Other Sensitive Species Sign

No canids or canid sign were found on or near the study area. Very few burrows were observed, probably due to the large substrate size.

No live bighorn sheep or sheep sign were found on or near the study area.

No fringe-toed lizards or fringe-toed lizard sign were found on or near the study area. See URS (2009) for results of a lizard survey during which fringe-toed lizards were observed.

No burrowing owls or burrowing owl sign were found on or near the study area.

No sensitive species were observed during performance of project activities.

Monitoring

There were no issues observed during monitoring. All trash was collected and deposited off site. The gates into the drill site were always closed upon arrival at the site during the weekly visits. There was no overflow of the fluid storage tanks during drilling.

Amanda Scheib monitored installation and removal of the drainage pipes, as well as the well test itself. The drainage pipes were placed in a wash to minimize erosion but release of water during the test was slow and therefore no erosion was observed to occur. Care was taken to keep common ravens (*Corvus corax*) away from the discharged water. All pipe was installed and removed by hand.

Upon completion of the wells and removal of the tortoise-proof fence Woodman inspected the work site and found no issues.

6.0 LITERATURE CITED

AMEC. 2001. Desert Tortoise Survey of the Opah Ditch Mine.

Kiva Biological Consulting. 2013. Protocol desert tortoise survey for Soda Mountain Solar Project, Spring 2013.

Kiva Biological Consulting. 2014. Biological Workplan, Soda Mountain Solar Well Drilling. June 23.

Nussear, K.E., Esque, T.C., Inman, R.D., Gass, L., Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. *Modeling Habitat of the Desert Tortoise (Gopherus agassizii) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona*. U.S. Geological Survey Open-File Report 2009-1102.

URS Corporation. 2009*. Biological Resources Technical Report, Soda Mountain Solar Project San Bernardino County, California*.

U.S. Fish and Wildlife Service. 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). Ventura, California. 18 pp.

U.S. Fish and Wildlife Service. 2011. Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance. November 2011. Available at http://www.deserttortoise.org/workshops/20111117b.USFWS%20DT%20Transocation%20Guidance%20v2.pdf.

Figure 1. Site location map for Soda Mountain Solar Project.

Figure 2. Locations of arrays for Soda Mountain Solar Project.

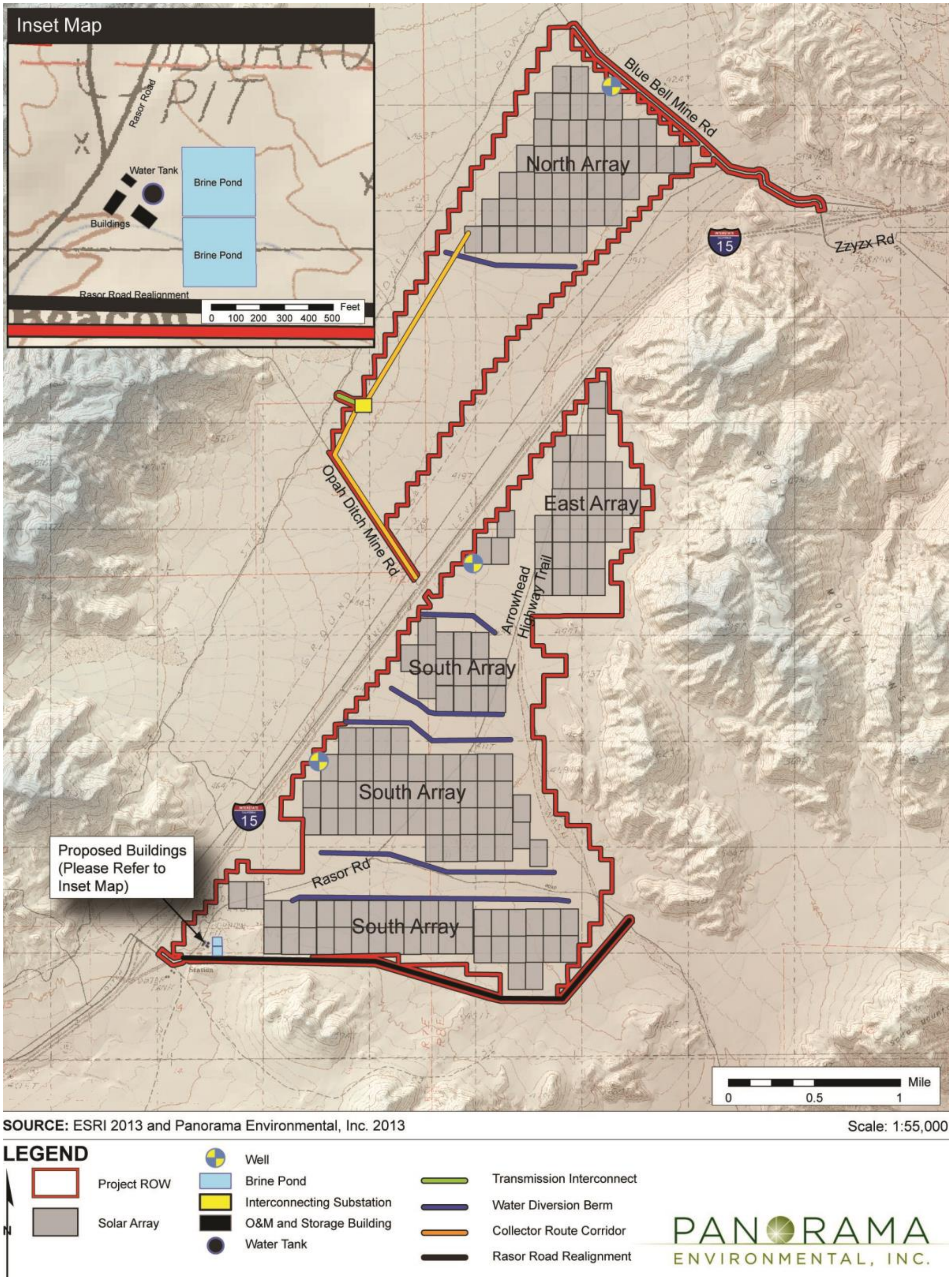


Figure 3. Well site and construction of tortoise-proof fence prior to drilling.

Figure 4. Well site and construction of tortoise-proof fence prior to drilling.

Figure 5. Discharge pipe for well project at Soda Mountain Solar Project.

Figure 6. Site after construction and removal of tortoise-proof fence.

Appendix L:
Protection Measures

Table L-1: Environmental Design Features Summary		
Environmental Design Feature	**Design Feature Description**	**Field Implementation Summary**
Biological Resources		
Biological 1: Worker Education Program	Field personnel will be trained prior to the field investigation, drilling, and aquifer testing activities. The purpose of the training will be to acquaint workers with the sensitive resources (e.g., wildlife, cactus, cultural resources, and paleontological resources) in the work area, the workers' responsibilities, and BLM's management objectives, and to define the steps to be taken should unanticipated resources be identified in the field. Worker training associated with biological resources will include the following components: • Descriptions of sensitive species within the project area • Conservation measures that have been identified to minimize impacts to sensitive species (e.g., speed limits, no pets on site) • Information on the presence, life history, and habitat of sensitive species • Information on federal and state laws protecting migratory birds Worker training associated with cultural and paleontological resources will include the following components: • A review of archaeology, history, prehistory, and Native American cultures associated with historical resources in the project area • A review of photographs and figures of potential historical resources and unique archaeological properties in the project area • A review of applicable local, state, and federal ordinances, laws, and regulations pertaining to cultural resource preservation • A discussion of procedures to be followed in the event that unanticipated paleontological or cultural resources are discovered during site work • A discussion of disciplinary and other actions that could be taken against persons violating historical preservation laws • Information on the protection of paleontological resources and procedures to be implemented in the event that fossil remains are encountered during ground-disturbing activities Documentation of worker training will be maintained on site.	Panorama prepared an Environmental Training Program (ETP) and provided the ETP to Burns & McDonnell Engineering (BMcD) to use to educate on-site personnel on the environmental protection measures for biological, cultural, paleontological, water resources, and recreational resources, as well as utilities and hazards. All on-site personnel signed an acknowledgement form stating that they had received and understood the training and would abide by the required environmental protection measures.

Table L-1: Environmental Design Features Summary		
Environmental Design Feature	**Design Feature Description**	**Field Implementation Summary**
Biological 2: Biological Surveys	Protocol surveys for desert tortoise have been conducted over the entire project site. Additional surveys will be conducted immediately prior to any ground disturbance. The survey area will extend a minimum of 20 feet from the edge of the roadway and 100 feet from the work areas. The results of the biological surveys will be provided to BLM prior to initiating ground-disturbing activities. Work areas will be located a minimum of 100 feet from burrows that could potentially be used by desert tortoise, kit fox, or burrowing owl.	Panorama prepared and submitted a work plan for biological surveys to BLM and USFWS for approval. The work plan was approved on July 7, 2014. Peter Woodman of Kiva Biological, a BLM-approved biologist trained and certified to handle desert tortoise, performed a preconstruction biological field survey of the approved drilling work area on August 11 and 12, 2014, and the approved leach field area on September 26, 2014. No desert tortoise or other special-status species were observed during the preconstruction surveys or at any time during the project activities.
Biological 3: Biological Monitor	A qualified biological monitor will survey the work area prior to ground disturbance (Biological 2) and exclusion fence installation (Biological 4). The biological monitor shall be pre-approved by BLM. The monitor will ensure that the project complies with desert tortoise avoidance measures and will have the authority and responsibility to halt activities that are in violation. Following exclusion fence installation (Biological 4), the biological monitor will inspect the work areas weekly for the presence of desert tortoise, burrowing owl, and kit fox during work within the desert tortoise exclusion fence. The biological monitor will perform daily inspections of the work area for any work conducted outside of desert tortoise exclusion fencing (i.e., installation of discharge pipe, temporary discharge, and removal of discharge pipe). The monitor will also work with the drilling supervisor to take steps to avoid disturbing desert tortoise. The biological monitor will keep a record of all sightings of desert tortoise and sign of desert tortoise.	Mr. Woodman performed a preconstruction biological field survey of the approved drilling work area on August 11 and 12, 2014, and the approved leach field area on September 26, 2014. No desert tortoise or other special-status species were observed during the preconstruction surveys. Mr. Woodman conducted weekly monitoring throughout the well drilling and well construction and monitored the groundwater discharge within the leach field area during the well test portion of the field program. No desert tortoise or other special-status species were observed during water discharge activities.

Table L-1: Environmental Design Features Summary		
Environmental Design Feature	**Design Feature Description**	**Field Implementation Summary**
Biological 4: Exclusion Fencing	Well drilling areas and all other drilling work areas will be delineated with temporary desert tortoise fencing. All drilling work will be restricted to these areas. The fences will be installed after the biologist completes the pre-activity surveys for each work area.	Mr. Woodman supervised installation of desert tortoise exclusion fencing by Our Valley Fence around the approved drilling work area,. Mr. Woodman also supervised installation of exclusion fencing around the approved leach field discharge area on September 26. No work was performed outside of the fenced areas.
Biological 5: Vegetation Management	Clearing or damage to vegetation will be avoided or minimized to the extent possible. When possible, equipment and vehicles will use previously disturbed areas. Vehicles and equipment will use areas within the defined work area enclosed within desert tortoise exclusion fence. The discharge piping will be installed and removed by hand, without the use of heavy equipment. Invasive species control strategies are defined in Appendix D.	National Exploration, Wells, and Pumps, the drilling contractor, performed minor grading of the work area on August 18, 2014, to reduce slip, trip, and fall hazards. The grading was verbally authorized by BLM by direct communication with BMcD. Clearing and damage to vegetation otherwise was avoided or minimized. All work was performed within the BLM-approved work areas (drilling work area and leach field).
Biological 6: Trash Removal	All on-site trash (including organic waste such as apple cores and orange peels) will be kept in covered trash receptacles with lids that can be fastened securely. No trash receptacles will be left without lids on site other than when trash is being deposited or transferred into another secure receptacle. No littering will be allowed on site. Trash will be controlled until it is placed in a trash container so that it is at no time accessible to wildlife. All trash on site will be collected and removed from the site on a daily basis. Any carcasses or road kill will be disposed of in accordance with state and federal regulations.	All on-site trash was kept in covered trash receptacles. Trash was removed from the site and disposed of appropriately at municipal waste disposal facilities. No carcasses or road kill were encountered during performance of the field program.
Biological 7: Vehicle Speed Limit	Vehicle speeds will be limited to 15 miles per hour on Blue Bell Mine Road and the project site.	All vehicles maintained speeds of a maximum of 15 miles per hour on Blue Bell Mine Road and the within the work site.

Table L-1: Environmental Design Features Summary		
Environmental Design Feature	**Design Feature Description**	**Field Implementation Summary**
Biological 8: Reclamation	Upon completion of decommissioning, the work area will be reclaimed. The goals of site reclamation are to restore the land to pre-project conditions; establish quality habitat for desert tortoise and other fauna; and minimize potential erosion through proper restoration activities and implementation of appropriate best management practices (BMPs). Reclamation will include decompaction of work areas, as appropriate, placement of removed rocks to mimic surrounding ground conditions, and destruction of the well and pad, as described previously. Temporary work areas will be allowed to reseed/revegetate naturally.	Decommissioning of the work site has not yet been completed so full reclamation has not been performed. The desert tortoise exclusion fencing was removed after completion of field activities on October 13, 2014.
Cultural and Paleontological Resources		
Cultural 1: Cultural Resource Discoveries	If any unanticipated cultural or paleontological resources are identified during excavation, all project activities will cease in the immediate area of the discovery and the information shall be reported to BLM. Work will not resume in the area until BLM issues written authorization to proceed. SMS will be responsible for the cost of the evaluation and appropriate resource management.	No unanticipated cultural or paleontological resources were identified during performance of project activities.
Cultural 2: Human Remains	SMS will contact BLM if there is an inadvertent discovery of human remains. SMS will notify the Native American Heritage Commission and the most likely affected tribes, if requested by BLM. BLM will notify the appropriate San Bernardino County official per BLM standard procedures.	No human remains were identified during performance of project activities.
Paleontological 1: Paleontological Resource Monitor	Soil cuttings will be stockpiled on site. A qualified Paleontologist will examine the soil cuttings generated from the well bores for paleontological resources.	Kim Scott of Cogstone Resource Management, Inc., was on site September 2 through 4, 2014. Ms. Scott performed a paleontologic survey in the vicinity of the work area and passed soil cuttings through sieves to identify paleontologic resources. Crinoid stems and gypsum crystals were observed in the cuttings. No potentially significant resources were observed.

Table L-1: Environmental Design Features Summary		
Environmental Design Feature	**Design Feature Description**	**Field Implementation Summary**
Utilities		
Utilities 1: Avoidance of Buried Utilities	SMS will contact Underground Service Alert to establish the location of any underground utilities in the vicinity of the proposed surface disturbance. Subsurface utilities will be avoided.	Drilling locations and the area of maximum disturbance were identified and marked with white paint and flagging tape in conjunction with BLM. Underground Service Alert (USA), a regional subsurface utility notification service, was contacted on July 30 (initial call) and August 6 (to update start date) to notify local utility companies of the upcoming subsurface work. The USA ticket was renewed on September 2, 2014. C Below, Inc., a private utility locator, performed a subsurface utility survey to screen the drilling locations for underground utilities on July 25, 2014. No subsurface utilities were identified within or near the work area.
Recreation		
Recreation 1: Avoidance of Conflicts	SMS will take every means feasible to avoid conflicts with recreational OHV use of the project area and to prevent accidents or incidents involving its employees, contractors, and the general public.	No recreational OHV users were encountered within the project area or near the work site during performance of field activities. The site-specific Health and Safety Plan was implemented and adhered to throughout the field program.

Table L-1: Environmental Design Features Summary		
Environmental Design Feature	**Design Feature Description**	**Field Implementation Summary**
Water Resources		
Water 1: Sanitary Facility Maintenance	Sanitary facilities for workers will be provided and cared for in an appropriate fashion to avoid impacts to water resources.	Sanitary facilities were properly maintained on site to avoid impacts to water resources.

Appendix M: Hydraulic Analyses

1 AQUIFER HYDRAULICS ANALYSIS

1.1 METHODOLOGY

The aquifer test was generally conducted as outlined in the Test Plan. The Step Drawdown Test was conducted first, and a sustainable pumping rate of 26 gpm was selected for the 72-hour constant rate test. The 72-hour constant-rate aquifer test was run for the complete 72 hours. A 21 hour recovery test was completed, once the water levels in the wells had recovered to greater than 90 percent of their static levels. The water levels recovered rapidly, with greater than 90 percent recovery within the first hour at PW-1, and within a few hours at OW-1.

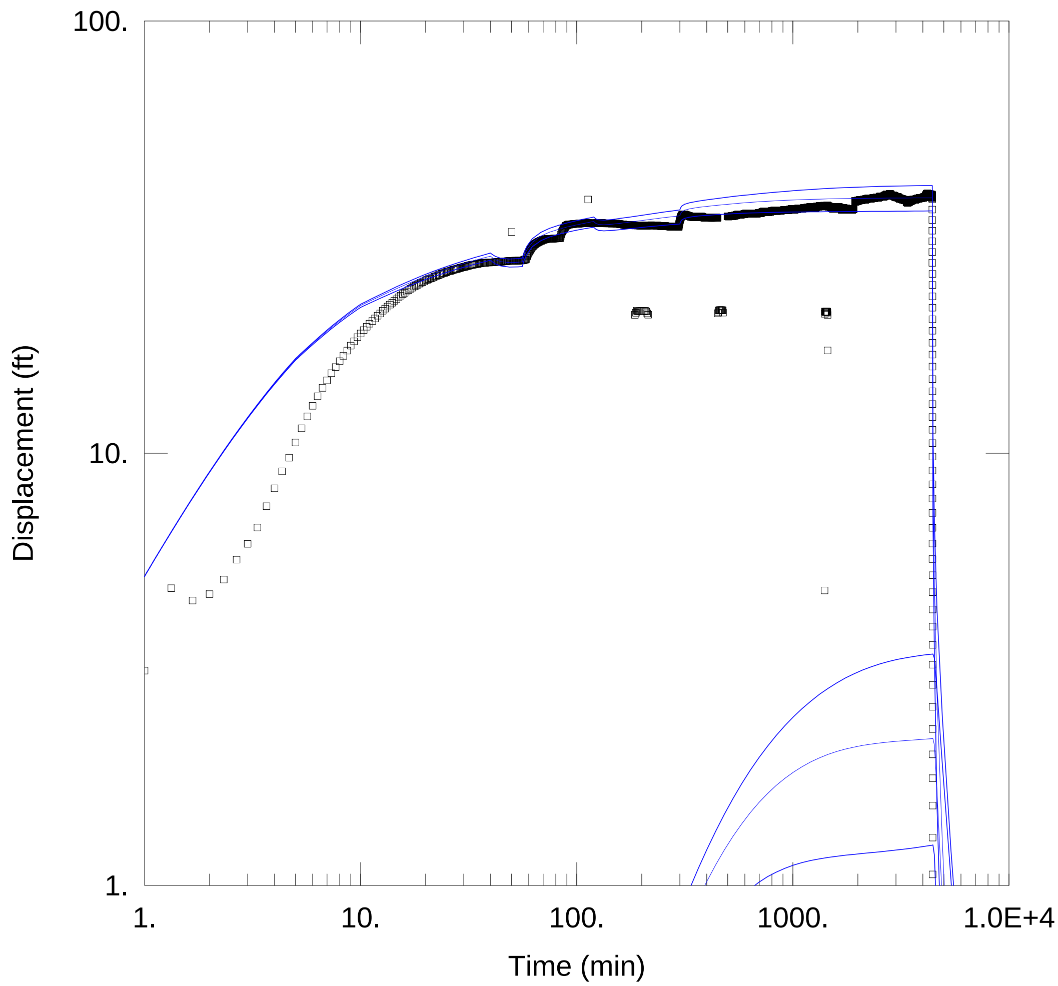
Water level measurements were collected in PW-1 and OW-1 via pressure transducers, and manual measurements, using an electric water level meter. Pressure transducer measurements were not "corrected" for atmospheric pressure changes, because when they were adjusted, the data did not correspond with the manual measurements, and showed trends that did not correspond to known conditions; for example, there were multiple rising and falling trends during pumping, the atmospheric record varied by more than a foot, and overwhelmed the 0.2 foot trend that was evident in the uncorrected data, and in the manual measurement data. It is evident that the atmospheric effects were not affecting the water levels 430 feet below ground surface, beneath a thick layer of clay, because they did not correspond to manual measurements, and thus were not valid to be applied to the data.

Transducer data were adjusted for small discrepancies that were evident from removing and replacing the transducers in the wells. Clear breaks in the data of up to 0.1 foot were evident before and after removal, due to small changes in the placement of the cord attached to the transducer, and were not consistent with the time-drawdown trend leading up to the removal. Once the small discrepancies were adjusted, the time-drawdwon curves were logical and readily analyzed with type curves.

The Aqtesolv v. 4.50 Professional analysis program was used to evaluate the aquifer test data. The data were first analyzed using a Jacob straight-line approximation. Further refinement of the solution was made by applying the Moench (1997) method, which allowed for adjustments to be made for partial penetration of the aquifer, well storage, and allowed for both the pumping curve and the recovery curve to be analyzed in the same plot. This allowed for a best fit solution that considered both the drawdown and the recovery data to be made.

1.2 RESULTS

The following presents a summary of the Aqtesolv analysis for PW-1 and OW-1 data.



PW-1 SODA MT. SOLAR PUMPING AND RECOVERY TEST OCTOBER 6-10, 2014

Data Set: C:\...\ow-1_1410080943_PW-1aqt2.aqt
Date: 10/14/14 Time: 21:54:35

PROJECT INFORMATION

Company: Burns & McDonnell
Client: Panorama/Soda Mt Solar
Location: Soda Mt. Valley
Test Well: PW-1
Test Date: 10/6/14

AQUIFER DATA

Saturated Thickness: 125. ft
Anisotropy Ratio (Kz/Kr): 0.2268

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0
OW-1	132	132

SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 0.1242 ft^2/min
Sy = 0.3215
Sw = 0.
r(c) = 0.416 ft

S = 0.003162
Kz/Kr = 0.2268
r(w) = 0.83 ft
alpha = 100. min^{-1}

Data Set: C:\Users\gkenoyer\Documents\Projects\Soda Mt\Well Construction\Aquifer Test\PT Data\OW-1\CSV\ow-1_14
Title: PW-1 Soda Mt. Solar Pumping and Recovery Test October 6-10, 2014
Date: 10/14/14
Time: 16:07:49

PROJECT INFORMATION

Company: Burns & McDonnell
Client: Panorama/Soda Mt Solar
Location: Soda Mt. Valley
Test Date: 10/6/14
Test Well: PW-1

AQUIFER DATA

Saturated Thickness: 125. ft
Anisotropy Ratio (Kz/Kr): 0.2268

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: PW-1

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.416 ft
Well Radius: 0.83 ft

Partially Penetrating Well
Depth to Top of Screen: 45. ft
Depth to Bottom of Screen: 115. ft

No. of pumping periods: 8

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	26.	56.	26.
5.	25.	120.	25.
10.	24.	300.	26.
40.	22.	4423.	0.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: PW-1

X Location: 0. ft
Y Location: 0. ft

Radial distance from PW-1: 0. ft

Partially Penetrating Well
Depth to Top of Screen: 45. ft
Depth to Bottom of Screen: 115. ft

No. of Observations: 13317

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.33	0.	2220.	38.76
0.67	0.76	2220.3	38.75
1.	3.14	2220.7	38.75
1.33	4.87	2221.	38.75
1.67	4.56	2221.3	38.75

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.	4.72	2221.7	38.76
2.33	5.1	2222.	38.76
2.67	5.67	2222.3	38.76
3.	6.17	2222.7	38.76
3.33	6.73	2223.	38.75
3.67	7.54	2223.3	38.74
4.	8.29	2223.7	38.77
4.33	9.08	2224.	38.78
4.67	9.76	2224.3	38.76
5.	10.58	2224.7	38.76
5.33	11.42	2225.	38.77
5.67	12.16	2225.3	38.79
6.	12.87	2225.7	38.78
6.33	13.54	2226.	38.77
6.67	14.16	2226.3	38.76
7.	14.74	2226.7	38.77
7.33	15.31	2227.	38.79
7.67	15.82	2227.3	38.78
8.	16.32	2227.7	38.77
8.33	16.79	2228.	38.78
8.67	17.26	2228.3	38.78
9.	17.73	2228.7	38.78
9.33	18.15	2229.	38.78
9.67	18.55	2229.3	38.78
10.	18.92	2229.7	38.78
10.33	19.26	2230.	38.79
10.67	19.61	2230.3	38.78
11.	19.93	2230.7	38.79
11.33	20.22	2231.	38.78
11.67	20.49	2231.3	38.78
12.	20.79	2231.7	38.8
12.33	21.05	2232.	38.81
12.67	21.35	2232.3	38.78
13.	21.59	2232.7	38.79
13.33	21.83	2233.	38.81
13.67	22.06	2233.3	38.81
14.	22.29	2233.7	38.79
14.33	22.52	2234.	38.81
14.67	22.71	2234.3	38.8
15.	22.94	2234.7	38.82
15.33	23.13	2235.	38.83
15.67	23.34	2235.3	38.82
16.	23.5	2235.7	38.81
16.33	23.66	2236.	38.82
16.67	23.84	2236.3	38.81
17.	24.	2236.7	38.82
17.33	24.15	2237.	38.8
17.67	24.28	2237.3	38.82
18.	24.4	2237.7	38.83
18.33	24.52	2238.	38.81
18.67	24.66	2238.3	38.8
19.	24.78	2238.7	38.81
19.33	24.88	2239.	38.81
19.67	24.99	2239.3	38.8
20.	25.1	2239.7	38.8
20.33	25.18	2240.	38.81
20.67	25.27	2240.3	38.81
21.	25.34	2240.7	38.81
21.33	25.42	2241.	38.8
21.67	25.51	2241.3	38.81
22.	25.61	2241.7	38.81
22.33	25.68	2242.	38.8
22.67	25.75	2242.3	38.81
23.	25.83	2242.7	38.81
23.33	25.91	2243.	38.81
23.67	26.	2243.3	38.81

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
24.	26.06	2243.7	38.8
24.33	26.12	2244.	38.82
24.67	26.19	2244.3	38.84
25.	26.25	2244.7	38.81
25.33	26.32	2245.	38.81
25.67	26.36	2245.3	38.83
26.	26.41	2245.7	38.83
26.33	26.45	2246.	38.82
26.67	26.51	2246.3	38.81
27.	26.56	2246.7	38.83
27.33	26.62	2247.	38.81
27.67	26.65	2247.3	38.8
28.	26.69	2247.7	38.82
28.33	26.75	2248.	38.82
28.67	26.79	2248.3	38.82
29.	26.83	2248.7	38.8
29.33	26.88	2249.	38.82
29.67	26.91	2249.3	38.8
30.	26.96	2249.7	38.81
30.33	26.98	2250.	38.83
30.67	27.03	2250.3	38.84
31.	27.06	2250.7	38.81
31.33	27.12	2251.	38.81
31.67	27.14	2251.3	38.82
32.	27.18	2251.7	38.82
32.33	27.22	2252.	38.82
32.67	27.25	2252.3	38.83
33.	27.27	2252.7	38.84
33.33	27.3	2253.	38.84
33.67	27.33	2253.3	38.85
34.	27.35	2253.7	38.84
34.33	27.38	2254.	38.84
34.67	27.4	2254.3	38.85
35.	27.43	2254.7	38.84
35.33	27.48	2255.	38.85
35.67	27.47	2255.3	38.84
36.	27.49	2255.7	38.85
36.33	27.53	2256.	38.86
36.67	27.55	2256.3	38.85
37.	27.57	2256.7	38.86
37.33	27.55	2257.	38.84
37.67	27.55	2257.3	38.84
38.	27.58	2257.7	38.86
38.33	27.6	2258.	38.84
38.67	27.6	2258.3	38.85
39.	27.6	2258.7	38.86
39.33	27.6	2259.	38.84
39.67	27.6	2259.3	38.86
40.	27.62	2259.7	38.85
40.33	27.63	2260.	38.86
40.67	27.63	2260.3	38.85
41.	27.65	2260.7	38.86
41.33	27.65	2261.	38.86
41.67	27.67	2261.3	38.86
42.	27.68	2261.7	38.86
42.33	27.68	2262.	38.87
42.67	27.7	2262.3	38.85
43.	27.69	2262.7	38.89
43.33	27.7	2263.	38.87
43.67	27.71	2263.3	38.86
44.	27.73	2263.7	38.86
44.33	27.75	2264.	38.86
44.67	27.73	2264.3	38.86
45.	27.74	2264.7	38.86
45.33	27.75	2265.	38.85
45.67	27.77	2265.3	38.84

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
46.	27.77	2265.7	38.85
46.33	27.78	2266.	38.84
46.67	27.8	2266.3	38.86
47.	27.79	2266.7	38.86
47.33	27.8	2267.	38.84
47.67	27.82	2267.3	38.86
48.	27.81	2267.7	38.84
48.33	27.82	2268.	38.84
48.67	27.84	2268.3	38.85
49.	27.83	2268.7	38.85
49.33	27.84	2269.	38.84
49.67	27.86	2269.3	38.85
50.	32.48	2269.7	38.82
50.33	27.85	2270.	38.82
50.67	27.86	2270.3	38.84
51.	27.86	2270.7	38.84
51.33	27.87	2271.	38.83
51.67	27.89	2271.3	38.84
52.	27.88	2271.7	38.82
52.33	27.88	2272.	38.82
52.67	27.88	2272.3	38.84
53.	27.87	2272.7	38.83
53.33	27.88	2273.	38.85
53.67	27.86	2273.3	38.83
54.	27.9	2273.7	38.83
54.33	27.9	2274.	38.83
54.67	27.89	2274.3	38.82
55.	27.9	2274.7	38.84
55.33	27.89	2275.	38.85
55.67	27.91	2275.3	38.83
56.	27.91	2275.7	38.83
56.33	27.91	2276.	38.85
56.67	27.94	2276.3	38.84
57.	27.98	2276.7	38.84
57.33	28.02	2277.	38.84
57.67	28.04	2277.3	38.83
58.	28.02	2277.7	38.86
58.33	28.11	2278.	38.83
58.67	28.35	2278.3	38.83
59.	28.56	2278.7	38.85
59.33	28.76	2279.	38.83
59.67	28.93	2279.3	38.83
60.	29.12	2279.7	38.83
60.33	29.26	2280.	38.82
60.67	29.41	2280.3	38.83
61.	29.56	2280.7	38.83
61.33	29.68	2281.	38.83
61.67	29.81	2281.3	38.82
62.	29.9	2281.7	38.84
62.33	30.02	2282.	38.81
62.67	30.11	2282.3	38.84
63.	30.19	2282.7	38.85
63.33	30.27	2283.	38.83
63.67	30.36	2283.3	38.84
64.	30.41	2283.7	38.83
64.33	30.47	2284.	38.83
64.67	30.53	2284.3	38.83
65.	30.59	2284.7	38.83
65.33	30.64	2285.	38.83
65.67	30.69	2285.3	38.83
66.	30.73	2285.7	38.83
66.33	30.76	2286.	38.82
66.67	30.8	2286.3	38.83
67.	30.85	2286.7	38.84
67.33	30.9	2287.	38.83
67.67	30.93	2287.3	38.84

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
68.	30.96	2287.7	38.83
68.33	30.98	2288.	38.83
68.67	31.	2288.3	38.85
69.	31.04	2288.7	38.84
69.33	31.09	2289.	38.84
69.67	31.12	2289.3	38.85
70.	31.15	2289.7	38.83
70.33	31.16	2290.	38.85
70.67	31.18	2290.3	38.85
71.	31.22	2290.7	38.83
71.33	31.2	2291.	38.84
71.67	31.22	2291.3	38.84
72.	31.25	2291.7	38.84
72.33	31.26	2292.	38.82
72.67	31.28	2292.3	38.84
73.	31.29	2292.7	38.81
73.33	31.31	2293.	38.82
73.67	31.31	2293.3	38.84
74.	31.29	2293.7	38.81
74.33	31.31	2294.	38.82
74.67	31.32	2294.3	38.84
75.	31.3	2294.7	38.83
75.33	31.32	2295.	38.82
75.67	31.32	2295.3	38.82
76.	31.32	2295.7	38.81
76.33	31.32	2296.	38.84
76.67	31.34	2296.3	38.82
77.	31.33	2296.7	38.81
77.33	31.34	2297.	38.83
77.67	31.35	2297.3	38.82
78.	31.34	2297.7	38.81
78.33	31.36	2298.	38.82
78.67	31.36	2298.3	38.8
79.	31.38	2298.7	38.82
79.33	31.38	2299.	38.82
79.67	31.37	2299.3	38.83
80.	31.37	2299.7	38.81
80.33	31.39	2300.	38.82
80.67	31.39	2300.3	38.82
81.	31.39	2300.7	38.83
81.33	31.4	2301.	38.83
81.67	31.39	2301.3	38.82
82.	31.41	2301.7	38.82
82.33	31.41	2302.	38.82
82.67	31.43	2302.3	38.82
83.	31.44	2302.7	38.83
83.33	31.43	2303.	38.82
83.67	31.46	2303.3	38.84
84.	31.46	2303.7	38.83
84.33	31.74	2304.	38.82
84.67	32.03	2304.3	38.83
85.	32.26	2304.7	38.83
85.33	32.44	2305.	38.84
85.67	32.54	2305.3	38.82
86.	32.65	2305.7	38.83
86.33	32.77	2306.	38.84
86.67	32.86	2306.3	38.82
87.	32.96	2306.7	38.84
87.33	33.03	2307.	38.84
87.67	33.12	2307.3	38.84
88.	33.25	2307.7	38.85
88.33	33.33	2308.	38.82
88.67	33.4	2308.3	38.85
89.	33.5	2308.7	38.85
89.33	33.57	2309.	38.83
89.67	33.6	2309.3	38.84

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
90.	33.65	2309.7	38.83
90.33	33.67	2310.	38.85
90.67	33.7	2310.3	38.84
91.	33.75	2310.7	38.83
91.33	33.77	2311.	38.84
91.67	33.77	2311.3	38.83
92.	33.81	2311.7	38.86
92.33	33.78	2312.	38.84
92.67	33.8	2312.3	38.86
93.	33.79	2312.7	38.84
93.33	33.81	2313.	38.85
93.67	33.84	2313.3	38.85
94.	33.83	2313.7	38.83
94.33	33.84	2314.	38.85
94.67	33.86	2314.3	38.84
95.	33.84	2314.7	38.85
95.33	33.86	2315.	38.84
95.67	33.87	2315.3	38.85
96.	33.88	2315.7	38.84
96.33	33.88	2316.	38.84
96.67	33.88	2316.3	38.86
97.	33.89	2316.7	38.85
97.33	33.9	2317.	38.85
97.67	33.91	2317.3	38.85
98.	33.91	2317.7	38.86
98.33	33.91	2318.	38.86
98.67	33.91	2318.3	38.86
99.	33.93	2318.7	38.85
99.33	33.91	2319.	38.84
99.67	33.92	2319.3	38.84
100.	33.93	2319.7	38.85
100.3	33.92	2320.	38.85
100.7	33.94	2320.3	38.85
101.	33.95	2320.7	38.86
101.3	33.93	2321.	38.86
101.7	33.94	2321.3	38.86
102.	33.98	2321.7	38.86
102.3	33.97	2322.	38.85
102.7	33.97	2322.3	38.86
103.	33.99	2322.7	38.85
103.3	34.01	2323.	38.84
103.7	33.97	2323.3	38.87
104.	34.	2323.7	38.85
104.3	34.02	2324.	38.85
104.7	34.01	2324.3	38.86
105.	34.	2324.7	38.84
105.3	34.01	2325.	38.87
105.7	34.01	2325.3	38.86
106.	34.03	2325.7	38.87
106.3	34.03	2326.	38.87
106.7	34.03	2326.3	38.85
107.	34.04	2326.7	38.87
107.3	34.04	2327.	38.85
107.7	34.02	2327.3	38.86
108.	34.03	2327.7	38.87
108.3	34.04	2328.	38.85
108.7	34.04	2328.3	38.86
109.	34.07	2328.7	38.86
109.3	34.07	2329.	38.87
109.7	34.07	2329.3	38.86
110.	34.07	2329.7	38.88
110.3	34.08	2330.	38.86
110.7	34.07	2330.3	38.87
111.	34.05	2330.7	38.87
111.3	34.06	2331.	38.85
111.7	34.07	2331.3	38.88

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
112.	34.05	2331.7	38.86
112.3	34.06	2332.	38.87
112.7	34.07	2332.3	38.85
113.	38.63	2332.7	38.86
113.3	34.05	2333.	38.88
113.7	34.06	2333.3	38.86
114.	34.07	2333.7	38.87
114.3	34.08	2334.	38.87
114.7	34.05	2334.3	38.86
115.	34.05	2334.7	38.86
115.3	34.04	2335.	38.87
115.7	34.04	2335.3	38.85
116.	34.04	2335.7	38.88
116.3	34.05	2336.	38.86
116.7	34.04	2336.3	38.87
117.	34.02	2336.7	38.88
117.3	34.03	2337.	38.86
117.7	34.03	2337.3	38.88
118.	34.03	2337.7	38.87
118.3	34.03	2338.	38.88
118.7	34.04	2338.3	38.87
119.	34.04	2338.7	38.87
119.3	34.04	2339.	38.89
119.7	34.05	2339.3	38.87
120.	34.03	2339.7	38.89
120.3	34.03	2340.	38.88
120.7	34.02	2340.3	38.88
121.	34.02	2340.7	38.89
121.3	34.01	2341.	38.88
121.7	34.02	2341.3	38.88
122.	34.05	2341.7	38.87
122.3	34.05	2342.	38.87
122.7	34.05	2342.3	38.89
123.	34.03	2342.7	38.88
123.3	34.05	2343.	38.88
123.7	34.07	2343.3	38.88
124.	34.07	2343.7	38.87
124.3	34.06	2344.	38.88
124.7	34.07	2344.3	38.87
125.	34.07	2344.7	38.88
125.3	34.07	2345.	38.89
125.7	34.08	2345.3	38.89
126.	34.07	2345.7	38.88
126.3	34.05	2346.	38.89
126.7	34.07	2346.3	38.9
127.	34.06	2346.7	38.9
127.3	34.08	2347.	38.88
127.7	34.09	2347.3	38.9
128.	34.1	2347.7	38.89
128.3	34.08	2348.	38.88
128.7	34.09	2348.3	38.89
129.	34.08	2348.7	38.89
129.3	34.06	2349.	38.9
129.7	34.07	2349.3	38.9
130.	34.06	2349.7	38.9
130.3	34.06	2350.	38.9
130.7	34.06	2350.3	38.89
131.	34.06	2350.7	38.9
131.3	34.07	2351.	38.89
131.7	34.05	2351.3	38.89
132.	34.07	2351.7	38.9
132.3	34.05	2352.	38.9
132.7	34.05	2352.3	38.91
133.	34.05	2352.7	38.9
133.3	34.05	2353.	38.9
133.7	34.05	2353.3	38.9

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
134.	34.03	2353.7	38.89
134.3	34.02	2354.	38.91
134.7	34.03	2354.3	38.89
135.	34.01	2354.7	38.9
135.3	34.01	2355.	38.89
135.7	34.02	2355.3	38.9
136.	34.02	2355.7	38.9
136.3	34.	2356.	38.88
136.7	34.	2356.3	38.9
137.	34.	2356.7	38.88
137.3	34.	2357.	38.89
137.7	34.	2357.3	38.91
138.	34.01	2357.7	38.89
138.3	34.	2358.	38.91
138.7	34.	2358.3	38.89
139.	34.01	2358.7	38.92
139.3	34.	2359.	38.9
139.7	34.	2359.3	38.91
140.	34.	2359.7	38.91
140.3	34.01	2360.	38.92
140.7	33.99	2360.3	38.91
141.	33.99	2360.7	38.91
141.3	33.99	2361.	38.92
141.7	33.99	2361.3	38.92
142.	33.99	2361.7	38.94
142.3	33.99	2362.	38.92
142.7	33.99	2362.3	38.94
143.	34.01	2362.7	38.93
143.3	34.02	2363.	38.94
143.7	34.02	2363.3	38.92
144.	34.01	2363.7	38.93
144.3	34.01	2364.	38.92
144.7	34.	2364.3	38.91
145.	33.97	2364.7	38.92
145.3	33.97	2365.	38.91
145.7	33.99	2365.3	38.92
146.	33.99	2365.7	38.91
146.3	33.99	2366.	38.91
146.7	34.01	2366.3	38.9
147.	34.	2366.7	38.92
147.3	33.99	2367.	38.9
147.7	33.98	2367.3	38.91
148.	33.98	2367.7	38.89
148.3	33.99	2368.	38.91
148.7	33.98	2368.3	38.9
149.	33.98	2368.7	38.9
149.3	33.99	2369.	38.88
149.7	34.	2369.3	38.91
150.	33.98	2369.7	38.89
150.3	33.97	2370.	38.91
150.7	33.98	2370.3	38.89
151.	33.99	2370.7	38.91
151.3	33.99	2371.	38.9
151.7	33.98	2371.3	38.91
152.	33.98	2371.7	38.89
152.3	33.96	2372.	38.91
152.7	33.96	2372.3	38.9
153.	33.97	2372.7	38.91
153.3	33.96	2373.	38.89
153.7	33.96	2373.3	38.9
154.	33.94	2373.7	38.89
154.3	33.94	2374.	38.91
154.7	33.94	2374.3	38.92
155.	33.92	2374.7	38.9
155.3	33.91	2375.	38.91
155.7	33.91	2375.3	38.9

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
156.	33.9	2375.7	38.92
156.3	33.9	2376.	38.89
156.7	33.9	2376.3	38.91
157.	33.9	2376.7	38.91
157.3	33.9	2377.	38.91
157.7	33.88	2377.3	38.91
158.	33.88	2377.7	38.91
158.3	33.87	2378.	38.93
158.7	33.86	2378.3	38.92
159.	33.86	2378.7	38.92
159.3	33.87	2379.	38.92
159.7	33.86	2379.3	38.93
160.	33.85	2379.7	38.92
160.3	33.85	2380.	38.92
160.7	33.85	2380.3	38.92
161.	33.85	2380.7	38.92
161.3	33.84	2381.	38.93
161.7	33.84	2381.3	38.92
162.	33.84	2381.7	38.92
162.3	33.84	2382.	38.93
162.7	33.82	2382.3	38.92
163.	33.83	2382.7	38.93
163.3	33.81	2383.	38.92
163.7	33.8	2383.3	38.93
164.	33.8	2383.7	38.92
164.3	33.8	2384.	38.92
164.7	33.79	2384.3	38.93
165.	33.78	2384.7	38.91
165.3	33.77	2385.	38.92
165.7	33.75	2385.3	38.91
166.	33.76	2385.7	38.92
166.3	33.75	2386.	38.93
166.7	33.75	2386.3	38.92
167.	33.75	2386.7	38.94
167.3	33.71	2387.	38.92
167.7	33.72	2387.3	38.92
168.	33.69	2387.7	38.92
168.3	33.71	2388.	38.93
168.7	33.71	2388.3	38.94
169.	33.69	2388.7	38.93
169.3	33.71	2389.	38.93
169.7	33.67	2389.3	38.94
170.	33.7	2389.7	38.93
170.3	33.67	2390.	38.93
170.7	33.69	2390.3	38.93
171.	33.69	2390.7	38.95
171.3	33.68	2391.	38.94
171.7	33.69	2391.3	38.94
172.	33.67	2391.7	38.93
172.3	33.69	2392.	38.94
172.7	33.69	2392.3	38.94
173.	33.71	2392.7	38.94
173.3	33.71	2393.	38.94
173.7	33.71	2393.3	38.93
174.	33.71	2393.7	38.93
174.3	33.71	2394.	38.95
174.7	33.72	2394.3	38.94
175.	33.72	2394.7	38.95
175.3	33.72	2395.	38.94
175.7	33.69	2395.3	38.94
176.	33.72	2395.7	38.94
176.3	33.72	2396.	38.93
176.7	33.72	2396.3	38.95
177.	33.72	2396.7	38.94
177.3	33.72	2397.	38.94
177.7	33.72	2397.3	38.95

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
178.	33.72	2397.7	38.95
178.3	33.72	2398.	38.96
178.7	33.72	2398.3	38.93
179.	33.71	2398.7	38.94
179.3	33.72	2399.	38.95
179.7	33.69	2399.3	38.94
180.	33.69	2399.7	38.96
180.3	33.69	2400.	38.95
180.7	33.69	2400.3	38.95
181.	33.69	2400.7	38.95
181.3	33.69	2401.	38.95
181.7	33.67	2401.3	38.96
182.	33.69	2401.7	38.94
182.3	33.66	2402.	38.96
182.7	33.67	2402.3	38.94
183.	33.66	2402.7	38.95
183.3	33.66	2403.	38.94
183.7	33.65	2403.3	38.95
184.	33.65	2403.7	38.95
184.3	33.65	2404.	38.96
184.7	33.65	2404.3	38.96
185.	33.65	2404.7	38.96
185.3	33.65	2405.	38.95
185.7	33.65	2405.3	38.96
186.	33.65	2405.7	38.94
186.3	33.62	2406.	38.96
186.7	33.65	2406.3	38.95
187.	33.65	2406.7	38.96
187.3	33.64	2407.	38.97
187.7	33.65	2407.3	38.97
188.	33.65	2407.7	38.97
188.3	33.65	2408.	38.96
188.7	33.65	2408.3	38.97
189.	33.65	2408.7	38.97
189.3	33.64	2409.	38.96
189.7	33.64	2409.3	38.98
190.	33.65	2409.7	38.97
190.3	33.64	2410.	38.98
190.7	33.62	2410.3	38.97
191.	33.65	2410.7	38.96
191.3	33.65	2411.	38.99
191.7	33.64	2411.3	38.96
192.	33.62	2411.7	38.98
192.3	33.65	2412.	38.97
192.7	33.65	2412.3	38.98
193.	33.65	2412.7	38.97
193.3	33.65	2413.	38.97
193.7	33.65	2413.3	38.99
194.	33.64	2413.7	38.99
194.3	33.64	2414.	38.97
194.7	33.64	2414.3	38.99
195.	33.62	2414.7	38.98
195.3	33.62	2415.	38.99
195.7	33.62	2415.3	38.98
196.	33.64	2415.7	38.98
196.3	33.62	2416.	39.
196.7	33.62	2416.3	38.97
197.	33.61	2416.7	38.98
197.3	33.61	2417.	38.98
197.7	33.62	2417.3	38.97
198.	33.61	2417.7	38.98
198.3	33.61	2418.	38.96
198.7	33.62	2418.3	38.97
199.	33.61	2418.7	38.98
199.3	33.61	2419.	38.98
199.7	33.62	2419.3	38.97

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
200.	33.64	2419.7	38.99
200.3	33.62	2420.	38.97
200.7	33.64	2420.3	38.98
201.	33.62	2420.7	38.98
201.3	33.62	2421.	38.97
201.7	33.64	2421.3	38.99
202.	33.64	2421.7	38.98
202.3	33.64	2422.	38.97
202.7	33.64	2422.3	38.98
203.	33.62	2422.7	38.98
203.3	33.61	2423.	38.98
203.7	33.64	2423.3	38.98
204.	33.62	2423.7	38.97
204.3	33.61	2424.	38.99
204.7	33.61	2424.3	38.98
205.	33.61	2424.7	38.98
205.3	33.59	2425.	38.99
205.7	33.58	2425.3	38.98
206.	33.59	2425.7	39.
206.3	33.61	2426.	38.99
206.7	33.59	2426.3	38.98
207.	33.59	2426.7	39.
207.3	33.58	2427.	38.98
207.7	33.58	2427.3	39.
208.	33.58	2427.7	39.
208.3	33.59	2428.	38.99
208.7	33.58	2428.3	39.
209.	33.59	2428.7	38.99
209.3	33.57	2429.	39.
209.7	33.56	2429.3	38.99
210.	33.59	2429.7	38.98
210.3	33.59	2430.	39.
210.7	33.58	2430.3	38.99
211.	33.56	2430.7	38.99
211.3	33.58	2431.	39.
211.7	33.59	2431.3	38.99
212.	33.59	2431.7	38.99
212.3	33.61	2432.	38.99
212.7	33.61	2432.3	38.97
213.	33.62	2432.7	39.
213.3	33.65	2433.	39.
213.7	33.62	2433.3	39.
214.	33.61	2433.7	39.
214.3	33.62	2434.	39.03
214.7	33.64	2434.3	39.
215.	33.65	2434.7	39.
215.3	33.64	2435.	39.02
215.7	33.65	2435.3	38.98
216.	33.62	2435.7	39.
216.3	33.64	2436.	39.02
216.7	33.65	2436.3	38.98
217.	33.65	2436.7	39.02
217.3	33.65	2437.	39.02
217.7	33.64	2437.3	38.99
218.	33.66	2437.7	39.02
218.3	33.66	2438.	39.
218.7	33.67	2438.3	39.
219.	33.66	2438.7	39.02
219.3	33.67	2439.	39.02
219.7	33.65	2439.3	39.02
220.	33.65	2439.7	39.02
220.3	33.65	2440.	39.
220.7	33.65	2440.3	39.02
221.	33.66	2440.7	39.03
221.3	33.69	2441.	39.
221.7	33.66	2441.3	39.03

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
222.	33.66	2441.7	39.02
222.3	33.67	2442.	38.99
222.7	33.65	2442.3	39.02
223.	33.65	2442.7	39.
223.3	33.65	2443.	39.02
223.7	33.65	2443.3	39.
224.	33.65	2443.7	39.
224.3	33.65	2444.	39.
224.7	33.65	2444.3	39.02
225.	33.65	2444.7	38.99
225.3	33.65	2445.	38.99
225.7	33.65	2445.3	39.
226.	33.65	2445.7	38.98
226.3	33.65	2446.	38.99
226.7	33.63	2446.3	38.99
227.	33.65	2446.7	38.98
227.3	33.63	2447.	39.
227.7	33.62	2447.3	38.99
228.	33.62	2447.7	38.99
228.3	33.61	2448.	39.
228.7	33.62	2448.3	38.98
229.	33.63	2448.7	39.02
229.3	33.62	2449.	38.99
229.7	33.62	2449.3	39.
230.	33.62	2449.7	39.
230.3	33.65	2450.	38.98
230.7	33.62	2450.3	39.
231.	33.63	2450.7	39.
231.3	33.63	2451.	38.98
231.7	33.63	2451.3	39.02
232.	33.63	2451.7	38.99
232.3	33.62	2452.	39.
232.7	33.63	2452.3	39.02
233.	33.6	2452.7	38.99
233.3	33.61	2453.	39.02
233.7	33.6	2453.3	39.02
234.	33.59	2453.7	38.98
234.3	33.6	2454.	39.02
234.7	33.6	2454.3	39.02
235.	33.61	2454.7	39.
235.3	33.59	2455.	39.03
235.7	33.6	2455.3	39.03
236.	33.6	2455.7	39.02
236.3	33.61	2456.	39.02
236.7	33.61	2456.3	39.
237.	33.61	2456.7	39.03
237.3	33.59	2457.	39.02
237.7	33.58	2457.3	39.02
238.	33.6	2457.7	39.02
238.3	33.57	2458.	39.02
238.7	33.57	2458.3	39.
239.	33.59	2458.7	39.02
239.3	33.58	2459.	39.
239.7	33.55	2459.3	39.03
240.	33.58	2459.7	39.02
240.3	33.58	2460.	39.
240.7	33.57	2460.3	39.03
241.	33.56	2460.7	39.02
241.3	33.54	2461.	39.02
241.7	33.56	2461.3	39.02
242.	33.55	2461.7	38.99
242.3	33.55	2462.	39.03
242.7	33.53	2462.3	39.
243.	33.54	2462.7	38.99
243.3	33.55	2463.	39.03
243.7	33.55	2463.3	39.

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
244.	33.53	2463.7	39.03
244.3	33.53	2464.	39.03
244.7	33.52	2464.3	39.
245.	33.51	2464.7	39.02
245.3	33.52	2465.	39.03
245.7	33.52	2465.3	39.03
246.	33.5	2465.7	39.03
246.3	33.49	2466.	39.03
246.7	33.5	2466.3	39.02
247.	33.5	2466.7	39.03
247.3	33.5	2467.	39.03
247.7	33.49	2467.3	39.03
248.	33.49	2467.7	39.03
248.3	33.5	2468.	39.03
248.7	33.52	2468.3	39.03
249.	33.51	2468.7	39.03
249.3	33.51	2469.	39.03
249.7	33.5	2469.3	39.03
250.	33.51	2469.7	39.03
250.3	33.52	2470.	39.03
250.7	33.5	2470.3	39.03
251.	33.5	2470.7	39.05
251.3	33.5	2471.	39.03
251.7	33.51	2471.3	39.05
252.	33.52	2471.7	39.05
252.3	33.5	2472.	39.03
252.7	33.5	2472.3	39.05
253.	33.51	2472.7	39.03
253.3	33.52	2473.	39.05
253.7	33.51	2473.3	39.05
254.	33.5	2473.7	39.06
254.3	33.51	2474.	39.06
254.7	33.52	2474.3	39.05
255.	33.52	2474.7	39.05
255.3	33.51	2475.	39.05
255.7	33.52	2475.3	39.03
256.	33.53	2475.7	39.05
256.3	33.53	2476.	39.06
256.7	33.51	2476.3	39.06
257.	33.49	2476.7	39.05
257.3	33.5	2477.	39.05
257.7	33.52	2477.3	39.06
258.	33.52	2477.7	39.06
258.3	33.52	2478.	39.06
258.7	33.51	2478.3	39.05
259.	33.53	2478.7	39.07
259.3	33.49	2479.	39.06
259.7	33.51	2479.3	39.03
260.	33.5	2479.7	39.06
260.3	33.49	2480.	39.06
260.7	33.5	2480.3	39.06
261.	33.5	2480.7	39.06
261.3	33.48	2481.	39.06
261.7	33.49	2481.3	39.05
262.	33.5	2481.7	39.06
262.3	33.48	2482.	39.06
262.7	33.5	2482.3	39.06
263.	33.48	2482.7	39.05
263.3	33.48	2483.	39.05
263.7	33.49	2483.3	39.05
264.	33.47	2483.7	39.06
264.3	33.5	2484.	39.05
264.7	33.48	2484.3	39.05
265.	33.46	2484.7	39.06
265.3	33.48	2485.	39.06
265.7	33.48	2485.3	39.06

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
266.	33.48	2485.7	39.03
266.3	33.47	2486.	39.06
266.7	33.45	2486.3	39.06
267.	33.46	2486.7	39.05
267.3	33.46	2487.	39.03
267.7	33.46	2487.3	39.05
268.	33.46	2487.7	39.05
268.3	33.44	2488.	39.03
268.7	33.44	2488.3	39.05
269.	33.45	2488.7	39.05
269.3	33.43	2489.	39.06
269.7	33.45	2489.3	39.05
270.	33.45	2489.7	39.05
270.3	33.44	2490.	39.03
270.7	33.43	2490.3	39.05
271.	33.42	2490.7	39.03
271.3	33.44	2491.	39.03
271.7	33.44	2491.3	39.03
272.	33.42	2491.7	39.05
272.3	33.44	2492.	39.05
272.7	33.42	2492.3	39.06
273.	33.43	2492.7	39.03
273.3	33.43	2493.	39.03
273.7	33.43	2493.3	39.03
274.	33.41	2493.7	39.06
274.3	33.42	2494.	39.05
274.7	33.44	2494.3	39.03
275.	33.42	2494.7	39.06
275.3	33.44	2495.	39.06
275.7	33.43	2495.3	39.05
276.	33.42	2495.7	39.06
276.3	33.42	2496.	39.06
276.7	33.43	2496.3	39.05
277.	33.42	2496.7	39.05
277.3	33.43	2497.	39.06
277.7	33.41	2497.3	39.07
278.	33.42	2497.7	39.07
278.3	33.42	2498.	39.06
278.7	33.42	2498.3	39.06
279.	33.43	2498.7	39.06
279.3	33.4	2499.	39.07
279.7	33.42	2499.3	39.06
280.	33.42	2499.7	39.06
280.3	33.42	2500.	39.07
280.7	33.43	2500.3	39.07
281.	33.44	2500.7	39.07
281.3	33.41	2501.	39.1
281.7	33.42	2501.3	39.07
282.	33.42	2501.7	39.07
282.3	33.41	2502.	39.07
282.7	33.43	2502.3	39.07
283.	33.4	2502.7	39.07
283.3	33.42	2503.	39.09
283.7	33.41	2503.3	39.07
284.	33.4	2503.7	39.07
284.3	33.42	2504.	39.09
284.7	33.41	2504.3	39.1
285.	33.41	2504.7	39.07
285.3	33.4	2505.	39.07
285.7	33.4	2505.3	39.09
286.	33.41	2505.7	39.07
286.3	33.37	2506.	39.09
286.7	33.4	2506.3	39.09
287.	33.38	2506.7	39.07
287.3	33.39	2507.	39.07
287.7	33.37	2507.3	39.06

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
288.	33.41	2507.7	39.09
288.3	33.38	2508.	39.09
288.7	33.38	2508.3	39.09
289.	33.38	2508.7	39.1
289.3	33.38	2509.	39.09
289.7	33.39	2509.3	39.09
290.	33.37	2509.7	39.1
290.3	33.38	2510.	39.09
290.7	33.37	2510.3	39.1
291.	33.39	2510.7	39.09
291.3	33.37	2511.	39.08
291.7	33.37	2511.3	39.07
292.	33.38	2511.7	39.09
292.3	33.39	2512.	39.1
292.7	33.38	2512.3	39.1
293.	33.39	2512.7	39.1
293.3	33.39	2513.	39.09
293.7	33.37	2513.3	39.09
294.	33.38	2513.7	39.1
294.3	33.37	2514.	39.1
294.7	33.39	2514.3	39.09
295.	33.37	2514.7	39.09
295.3	33.37	2515.	39.09
295.7	33.37	2515.3	39.1
296.	33.37	2515.7	39.1
296.3	33.37	2516.	39.1
296.7	33.35	2516.3	39.1
297.	33.5	2516.7	39.12
297.3	33.64	2517.	39.13
297.7	33.79	2517.3	39.13
298.	33.89	2517.7	39.12
298.3	34.	2518.	39.12
298.7	34.12	2518.3	39.13
299.	34.22	2518.7	39.13
299.3	34.31	2519.	39.15
299.7	34.4	2519.3	39.14
300.	34.48	2519.7	39.14
300.3	34.55	2520.	39.13
300.7	34.64	2520.3	39.14
301.	34.7	2520.7	39.15
301.3	34.78	2521.	39.15
301.7	34.83	2521.3	39.15
302.	34.89	2521.7	39.15
302.3	34.95	2522.	39.17
302.7	35.02	2522.3	39.15
303.	35.08	2522.7	39.16
303.3	35.13	2523.	39.16
303.7	35.17	2523.3	39.15
304.	35.21	2523.7	39.14
304.3	35.25	2524.	39.15
304.7	35.3	2524.3	39.16
305.	35.34	2524.7	39.17
305.3	35.36	2525.	39.16
305.7	35.4	2525.3	39.17
306.	35.42	2525.7	39.18
306.3	35.48	2526.	39.18
306.7	35.49	2526.3	39.17
307.	35.52	2526.7	39.16
307.3	35.55	2527.	39.16
307.7	35.55	2527.3	39.17
308.	35.59	2527.7	39.16
308.3	35.62	2528.	39.18
308.7	35.61	2528.3	39.18
309.	35.63	2528.7	39.16
309.3	35.63	2529.	39.18
309.7	35.62	2529.3	39.19

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
310.	35.63	2529.7	39.18
310.3	35.64	2530.	39.18
310.7	35.64	2530.3	39.18
311.	35.65	2530.7	39.18
311.3	35.63	2531.	39.19
311.7	35.64	2531.3	39.2
312.	35.64	2531.7	39.2
312.3	35.65	2532.	39.2
312.7	35.66	2532.3	39.2
313.	35.69	2532.7	39.21
313.3	35.7	2533.	39.2
313.7	35.69	2533.3	39.22
314.	35.68	2533.7	39.21
314.3	35.67	2534.	39.2
314.7	35.66	2534.3	39.21
315.	35.64	2534.7	39.21
315.3	35.65	2535.	39.22
315.7	35.64	2535.3	39.21
316.	35.64	2535.7	39.22
316.3	35.64	2536.	39.21
316.7	35.63	2536.3	39.2
317.	35.62	2536.7	39.21
317.3	35.61	2537.	39.2
317.7	35.61	2537.3	39.22
318.	35.61	2537.7	39.2
318.3	35.61	2538.	39.21
318.7	35.59	2538.3	39.21
319.	35.58	2538.7	39.21
319.3	35.57	2539.	39.21
319.7	35.56	2539.3	39.2
320.	35.56	2539.7	39.21
320.3	35.57	2540.	39.2
320.7	35.54	2540.3	39.2
321.	35.55	2540.7	39.2
321.3	35.55	2541.	39.2
321.7	35.53	2541.3	39.18
322.	35.52	2541.7	39.19
322.3	35.5	2542.	39.19
322.7	35.5	2542.3	39.2
323.	35.49	2542.7	39.19
323.3	35.48	2543.	39.2
323.7	35.46	2543.3	39.19
324.	35.47	2543.7	39.2
324.3	35.47	2544.	39.19
324.7	35.46	2544.3	39.19
325.	35.46	2544.7	39.18
325.3	35.46	2545.	39.2
325.7	35.44	2545.3	39.19
326.	35.44	2545.7	39.19
326.3	35.45	2546.	39.19
326.7	35.42	2546.3	39.2
327.	35.42	2546.7	39.2
327.3	35.42	2547.	39.19
327.7	35.4	2547.3	39.2
328.	35.42	2547.7	39.21
328.3	35.42	2548.	39.19
328.7	35.4	2548.3	39.2
329.	35.42	2548.7	39.19
329.3	35.37	2549.	39.22
329.7	35.39	2549.3	39.2
330.	35.38	2549.7	39.2
330.3	35.38	2550.	39.21
330.7	35.37	2550.3	39.21
331.	35.37	2550.7	39.23
331.3	35.36	2551.	39.23
331.7	35.35	2551.3	39.21

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
332.	35.34	2551.7	39.22
332.3	35.35	2552.	39.2
332.7	35.33	2552.3	39.22
333.	35.34	2552.7	39.23
333.3	35.33	2553.	39.23
333.7	35.31	2553.3	39.22
334.	35.32	2553.7	39.23
334.3	35.33	2554.	39.24
334.7	35.3	2554.3	39.23
335.	35.3	2554.7	39.24
335.3	35.3	2555.	39.24
335.7	35.28	2555.3	39.24
336.	35.29	2555.7	39.23
336.3	35.27	2556.	39.23
336.7	35.27	2556.3	39.24
337.	35.26	2556.7	39.22
337.3	35.26	2557.	39.22
337.7	35.26	2557.3	39.22
338.	35.25	2557.7	39.22
338.3	35.24	2558.	39.21
338.7	35.25	2558.3	39.23
339.	35.24	2558.7	39.23
339.3	35.26	2559.	39.22
339.7	35.23	2559.3	39.23
340.	35.25	2559.7	39.21
340.3	35.23	2560.	39.22
340.7	35.23	2560.3	39.22
341.	35.22	2560.7	39.23
341.3	35.23	2561.	39.23
341.7	35.21	2561.3	39.22
342.	35.2	2561.7	39.23
342.3	35.21	2562.	39.23
342.7	35.2	2562.3	39.23
343.	35.18	2562.7	39.23
343.3	35.2	2563.	39.22
343.7	35.18	2563.3	39.23
344.	35.17	2563.7	39.22
344.3	35.17	2564.	39.23
344.7	35.19	2564.3	39.22
345.	35.19	2564.7	39.24
345.3	35.16	2565.	39.23
345.7	35.17	2565.3	39.22
346.	35.2	2565.7	39.23
346.3	35.19	2566.	39.22
346.7	35.17	2566.3	39.24
347.	35.17	2566.7	39.24
347.3	35.17	2567.	39.25
347.7	35.16	2567.3	39.24
348.	35.16	2567.7	39.23
348.3	35.16	2568.	39.23
348.7	35.14	2568.3	39.22
349.	35.15	2568.7	39.22
349.3	35.15	2569.	39.22
349.7	35.15	2569.3	39.22
350.	35.15	2569.7	39.22
350.3	35.17	2570.	39.24
350.7	35.16	2570.3	39.23
351.	35.16	2570.7	39.23
351.3	35.17	2571.	39.24
351.7	35.17	2571.3	39.22
352.	35.15	2571.7	39.23
352.3	35.17	2572.	39.24
352.7	35.16	2572.3	39.24
353.	35.16	2572.7	39.25
353.3	35.18	2573.	39.25
353.7	35.18	2573.3	39.24

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
354.	35.17	2573.7	39.24
354.3	35.17	2574.	39.24
354.7	35.16	2574.3	39.24
355.	35.14	2574.7	39.24
355.3	35.17	2575.	39.25
355.7	35.15	2575.3	39.26
356.	35.15	2575.7	39.25
356.3	35.15	2576.	39.26
356.7	35.15	2576.3	39.25
357.	35.16	2576.7	39.24
357.3	35.16	2577.	39.25
357.7	35.17	2577.3	39.25
358.	35.18	2577.7	39.25
358.3	35.16	2578.	39.26
358.7	35.18	2578.3	39.26
359.	35.17	2578.7	39.27
359.3	35.18	2579.	39.27
359.7	35.19	2579.3	39.26
360.	35.19	2579.7	39.26
360.3	35.22	2580.	39.25
360.7	35.21	2580.3	39.26
361.	35.23	2580.7	39.26
361.3	35.22	2581.	39.26
361.7	35.25	2581.3	39.26
362.	35.27	2581.7	39.27
362.3	35.28	2582.	39.27
362.7	35.28	2582.3	39.26
363.	35.3	2582.7	39.26
363.3	35.29	2583.	39.26
363.7	35.31	2583.3	39.26
364.	35.3	2583.7	39.27
364.3	35.3	2584.	39.28
364.7	35.3	2584.3	39.28
365.	35.32	2584.7	39.26
365.3	35.31	2585.	39.26
365.7	35.32	2585.3	39.26
366.	35.32	2585.7	39.26
366.3	35.32	2586.	39.28
366.7	35.31	2586.3	39.27
367.	35.31	2586.7	39.29
367.3	35.32	2587.	39.27
367.7	35.3	2587.3	39.26
368.	35.31	2587.7	39.27
368.3	35.29	2588.	39.28
368.7	35.29	2588.3	39.28
369.	35.28	2588.7	39.28
369.3	35.28	2589.	39.27
369.7	35.25	2589.3	39.26
370.	35.27	2589.7	39.26
370.3	35.26	2590.	39.25
370.7	35.25	2590.3	39.26
371.	35.26	2590.7	39.28
371.3	35.25	2591.	39.28
371.7	35.24	2591.3	39.27
372.	35.25	2591.7	39.27
372.3	35.24	2592.	39.26
372.7	35.25	2592.3	39.26
373.	35.26	2592.7	39.28
373.3	35.25	2593.	39.28
373.7	35.27	2593.3	39.28
374.	35.25	2593.7	39.28
374.3	35.26	2594.	39.27
374.7	35.26	2594.3	39.29
375.	35.26	2594.7	39.29
375.3	35.27	2595.	39.29
375.7	35.25	2595.3	39.28

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
376.	35.26	2595.7	39.28
376.3	35.27	2596.	39.27
376.7	35.25	2596.3	39.28
377.	35.26	2596.7	39.28
377.3	35.24	2597.	39.29
377.7	35.26	2597.3	39.28
378.	35.26	2597.7	39.28
378.3	35.27	2598.	39.26
378.7	35.26	2598.3	39.27
379.	35.25	2598.7	39.25
379.3	35.25	2599.	39.27
379.7	35.25	2599.3	39.28
380.	35.23	2599.7	39.28
380.3	35.23	2600.	39.25
380.7	35.23	2600.3	39.25
381.	35.2	2600.7	39.25
381.3	35.22	2601.	39.24
381.7	35.22	2601.3	39.25
382.	35.19	2601.7	39.25
382.3	35.19	2602.	39.25
382.7	35.2	2602.3	39.25
383.	35.19	2602.7	39.24
383.3	35.16	2603.	39.23
383.7	35.18	2603.3	39.24
384.	35.16	2603.7	39.24
384.3	35.15	2604.	39.25
384.7	35.15	2604.3	39.25
385.	35.15	2604.7	39.24
385.3	35.15	2605.	39.23
385.7	35.13	2605.3	39.24
386.	35.13	2605.7	39.22
386.3	35.13	2606.	39.21
386.7	35.13	2606.3	39.23
387.	35.1	2606.7	39.23
387.3	35.08	2607.	39.23
387.7	35.1	2607.3	39.24
388.	35.1	2607.7	39.23
388.3	35.08	2608.	39.23
388.7	35.08	2608.3	39.24
389.	35.07	2608.7	39.22
389.3	35.09	2609.	39.21
389.7	35.07	2609.3	39.21
390.	35.08	2609.7	39.22
390.3	35.08	2610.	39.22
390.7	35.08	2610.3	39.22
391.	35.07	2610.7	39.24
391.3	35.07	2611.	39.23
391.7	35.08	2611.3	39.22
392.	35.07	2611.7	39.23
392.3	35.05	2612.	39.23
392.7	35.07	2612.3	39.23
393.	35.09	2612.7	39.21
393.3	35.07	2613.	39.22
393.7	35.07	2613.3	39.22
394.	35.09	2613.7	39.21
394.3	35.08	2614.	39.22
394.7	35.08	2614.3	39.22
395.	35.08	2614.7	39.21
395.3	35.08	2615.	39.21
395.7	35.09	2615.3	39.2
396.	35.09	2615.7	39.2
396.3	35.07	2616.	39.22
396.7	35.08	2616.3	39.22
397.	35.09	2616.7	39.21
397.3	35.08	2617.	39.22
397.7	35.07	2617.3	39.22

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
398.	35.08	2617.7	39.22
398.3	35.1	2618.	39.23
398.7	35.09	2618.3	39.23
399.	35.08	2618.7	39.22
399.3	35.06	2619.	39.22
399.7	35.06	2619.3	39.22
400.	35.08	2619.7	39.22
400.3	35.06	2620.	39.21
400.7	35.06	2620.3	39.22
401.	35.05	2620.7	39.22
401.3	35.08	2621.	39.21
401.7	35.08	2621.3	39.23
402.	35.07	2621.7	39.22
402.3	35.07	2622.	39.21
402.7	35.07	2622.3	39.23
403.	35.07	2622.7	39.24
403.3	35.07	2623.	39.22
403.7	35.07	2623.3	39.23
404.	35.08	2623.7	39.23
404.3	35.07	2624.	39.22
404.7	35.06	2624.3	39.22
405.	35.08	2624.7	39.21
405.3	35.08	2625.	39.2
405.7	35.06	2625.3	39.22
406.	35.07	2625.7	39.22
406.3	35.05	2626.	39.22
406.7	35.05	2626.3	39.22
407.	35.07	2626.7	39.23
407.3	35.08	2627.	39.23
407.7	35.07	2627.3	39.23
408.	35.07	2627.7	39.24
408.3	35.07	2628.	39.23
408.7	35.07	2628.3	39.23
409.	35.06	2628.7	39.21
409.3	35.07	2629.	39.21
409.7	35.07	2629.3	39.21
410.	35.08	2629.7	39.21
410.3	35.08	2630.	39.21
410.7	35.07	2630.3	39.22
411.	35.08	2630.7	39.23
411.3	35.05	2631.	39.23
411.7	35.06	2631.3	39.22
412.	35.07	2631.7	39.23
412.3	35.05	2632.	39.21
412.7	35.05	2632.3	39.23
413.	35.07	2632.7	39.22
413.3	35.06	2633.	39.24
413.7	35.07	2633.3	39.23
414.	35.06	2633.7	39.22
414.3	35.06	2634.	39.22
414.7	35.04	2634.3	39.23
415.	35.05	2634.7	39.24
415.3	35.03	2635.	39.23
415.7	35.05	2635.3	39.23
416.	35.02	2635.7	39.24
416.3	35.03	2636.	39.23
416.7	35.03	2636.3	39.26
417.	35.03	2636.7	39.25
417.3	35.02	2637.	39.24
417.7	35.02	2637.3	39.25
418.	34.99	2637.7	39.26
418.3	35.03	2638.	39.25
418.7	35.	2638.3	39.25
419.	35.02	2638.7	39.25
419.3	35.02	2639.	39.24
419.7	35.02	2639.3	39.25

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
420.	35.01	2639.7	39.26
420.3	35.02	2640.	39.28
420.7	35.03	2640.3	39.26
421.	35.02	2640.7	39.27
421.3	35.01	2641.	39.29
421.7	35.02	2641.3	39.29
422.	35.	2641.7	39.27
422.3	35.01	2642.	39.27
422.7	35.01	2642.3	39.28
423.	35.02	2642.7	39.29
423.3	35.02	2643.	39.28
423.7	35.02	2643.3	39.29
424.	35.02	2643.7	39.29
424.3	35.02	2644.	39.28
424.7	35.	2644.3	39.29
425.	35.02	2644.7	39.29
425.3	35.02	2645.	39.29
425.7	35.03	2645.3	39.3
426.	35.03	2645.7	39.3
426.3	35.02	2646.	39.32
426.7	35.02	2646.3	39.31
427.	35.01	2646.7	39.3
427.3	35.01	2647.	39.31
427.7	35.02	2647.3	39.3
428.	35.05	2647.7	39.3
428.3	35.04	2648.	39.32
428.7	35.04	2648.3	39.32
429.	35.03	2648.7	39.32
429.3	35.02	2649.	39.32
429.7	35.03	2649.3	39.34
430.	35.03	2649.7	39.32
430.3	35.05	2650.	39.33
430.7	35.03	2650.3	39.34
431.	35.02	2650.7	39.34
431.3	35.04	2651.	39.33
431.7	35.	2651.3	39.33
432.	35.01	2651.7	39.31
432.3	35.01	2652.	39.3
432.7	35.01	2652.3	39.31
433.	35.02	2652.7	39.31
433.3	35.03	2653.	39.29
433.7	35.01	2653.3	39.29
434.	35.02	2653.7	39.28
434.3	35.02	2654.	39.29
434.7	35.02	2654.3	39.28
435.	35.02	2654.7	39.3
435.3	35.02	2655.	39.28
435.7	35.01	2655.3	39.29
436.	35.02	2655.7	39.28
436.3	35.01	2656.	39.27
436.7	35.01	2656.3	39.27
437.	35.01	2656.7	39.26
437.3	35.02	2657.	39.27
437.7	35.02	2657.3	39.27
438.	35.02	2657.7	39.29
438.3	35.02	2658.	39.27
438.7	35.02	2658.3	39.29
439.	35.06	2658.7	39.29
439.3	35.07	2659.	39.28
439.7	35.08	2659.3	39.26
440.	35.09	2659.7	39.26
440.3	35.09	2660.	39.25
440.7	35.08	2660.3	39.28
441.	35.08	2660.7	39.28
441.3	35.07	2661.	39.28
441.7	35.07	2661.3	39.27

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
442.	35.06	2661.7	39.26
442.3	35.05	2662.	39.26
442.7	35.07	2662.3	39.27
443.	35.05	2662.7	39.28
443.3	35.07	2663.	39.28
443.7	35.07	2663.3	39.27
444.	35.08	2663.7	39.25
444.3	35.07	2664.	39.26
444.7	35.06	2664.3	39.27
445.	35.08	2664.7	39.27
445.3	35.07	2665.	39.28
445.7	35.06	2665.3	39.28
446.	35.05	2665.7	39.27
446.3	35.05	2666.	39.3
446.7	35.04	2666.3	39.29
447.	35.05	2666.7	39.31
447.3	35.05	2667.	39.3
447.7	35.04	2667.3	39.31
448.	35.04	2667.7	39.31
448.3	35.04	2668.	39.33
448.7	63.63	2668.3	39.32
449.	70.45	2668.7	39.34
449.3	70.5	2669.	39.34
449.7	70.54	2669.3	39.34
450.	70.57	2669.7	39.36
450.3	70.6	2670.	39.36
450.7	70.64	2670.3	39.39
451.	70.68	2670.7	39.36
451.3	70.7	2671.	39.39
451.7	70.72	2671.3	39.38
452.	70.75	2671.7	39.41
452.3	70.75	2672.	39.39
452.7	70.79	2672.3	39.41
453.	70.84	2672.7	39.39
453.3	70.88	2673.	39.41
453.7	70.93	2673.3	39.42
454.	70.82	2673.7	39.42
454.3	70.83	2674.	39.43
454.7	70.88	2674.3	39.42
455.	70.9	2674.7	39.43
455.3	70.83	2675.	39.42
455.7	70.85	2675.3	39.44
456.	70.9	2675.7	39.42
456.3	70.92	2676.	39.44
456.7	70.9	2676.3	39.44
457.	70.87	2676.7	39.44
457.3	70.81	2677.	39.45
457.7	70.86	2677.3	39.43
458.	70.82	2677.7	39.43
458.3	70.82	2678.	39.44
458.7	70.8	2678.3	39.45
459.	70.83	2678.7	39.44
459.3	70.84	2679.	39.45
459.7	70.86	2679.3	39.45
460.	70.93	2679.7	39.46
460.3	70.92	2680.	39.46
460.7	70.9	2680.3	39.44
461.	70.92	2680.7	39.45
461.3	70.88	2681.	39.44
461.7	70.82	2681.3	39.45
462.	70.85	2681.7	39.46
462.3	70.78	2682.	39.46
462.7	70.92	2682.3	39.45
463.	70.9	2682.7	39.46
463.3	70.88	2683.	39.45
463.7	70.9	2683.3	39.45

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
464.	70.87	2683.7	39.48
464.3	70.93	2684.	39.46
464.7	70.84	2684.3	39.48
465.	70.84	2684.7	39.46
465.3	70.86	2685.	39.46
465.7	70.9	2685.3	39.46
466.	70.88	2685.7	39.47
466.3	70.88	2686.	39.48
466.7	70.98	2686.3	39.46
467.	70.9	2686.7	39.47
467.3	70.97	2687.	39.46
467.7	70.9	2687.3	39.47
468.	70.93	2687.7	39.47
468.3	70.92	2688.	39.48
468.7	70.94	2688.3	39.49
469.	70.93	2688.7	39.48
469.3	70.95	2689.	39.47
469.7	71.03	2689.3	39.49
470.	70.93	2689.7	39.48
470.3	70.94	2690.	39.48
470.7	71.	2690.3	39.47
471.	70.96	2690.7	39.48
471.3	70.96	2691.	39.48
471.7	70.97	2691.3	39.49
472.	70.95	2691.7	39.48
472.3	70.96	2692.	39.48
472.7	70.93	2692.3	39.49
473.	70.94	2692.7	39.49
473.3	71.01	2693.	39.5
473.7	71.02	2693.3	39.49
474.	71.02	2693.7	39.5
474.3	71.02	2694.	39.5
474.7	71.	2694.3	39.53
475.	71.03	2694.7	39.5
475.3	71.02	2695.	39.5
475.7	71.03	2695.3	39.52
476.	71.03	2695.7	39.51
476.3	71.03	2696.	39.53
476.7	71.04	2696.3	39.51
477.	71.04	2696.7	39.53
477.3	71.03	2697.	39.5
477.7	71.03	2697.3	39.5
478.	71.03	2697.7	39.53
478.3	71.01	2698.	39.51
478.7	71.03	2698.3	39.53
479.	71.01	2698.7	39.52
479.3	71.	2699.	39.51
479.7	71.03	2699.3	39.52
480.	71.01	2699.7	39.52
480.3	71.04	2700.	39.52
480.7	71.03	2700.3	39.53
481.	71.04	2700.7	39.53
481.3	71.04	2701.	39.51
481.7	71.03	2701.3	39.54
482.	71.01	2701.7	39.53
482.3	71.02	2702.	39.53
482.7	71.02	2702.3	39.55
483.	71.03	2702.7	39.53
483.3	71.03	2703.	39.55
483.7	71.02	2703.3	39.55
484.	71.03	2703.7	39.55
484.3	71.03	2704.	39.55
484.7	71.03	2704.3	39.56
485.	71.02	2704.7	39.55
485.3	71.04	2705.	39.55
485.7	71.03	2705.3	39.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
486.	71.04	2705.7	39.54
486.3	71.	2706.	39.56
486.7	71.	2706.3	39.56
487.	71.01	2706.7	39.55
487.3	71.02	2707.	39.57
487.7	71.01	2707.3	39.57
488.	71.01	2707.7	39.57
488.3	71.03	2708.	39.58
488.7	71.03	2708.3	39.58
489.	71.03	2708.7	39.59
489.3	71.03	2709.	39.58
489.7	71.02	2709.3	39.61
490.	71.02	2709.7	39.58
490.3	71.04	2710.	39.59
490.7	71.03	2710.3	39.6
491.	71.04	2710.7	39.6
491.3	71.04	2711.	39.6
491.7	71.03	2711.3	39.6
492.	71.03	2711.7	39.6
492.3	71.02	2712.	39.61
492.7	71.09	2712.3	39.61
493.	71.07	2712.7	39.6
493.3	71.05	2713.	39.6
493.7	71.05	2713.3	39.61
494.	70.98	2713.7	39.6
494.3	70.92	2714.	39.59
494.7	70.84	2714.3	39.6
495.	70.79	2714.7	39.6
495.3	70.76	2715.	39.6
495.7	70.68	2715.3	39.61
496.	70.64	2715.7	39.6
496.3	70.58	2716.	39.6
496.7	70.53	2716.3	39.61
497.	70.5	2716.7	39.62
497.3	60.86	2717.	39.64
497.7	55.25	2717.3	39.64
498.	46.46	2717.7	39.64
498.3	35.31	2718.	39.64
498.7	35.3	2718.3	39.65
499.	35.29	2718.7	39.64
499.3	35.3	2719.	39.66
499.7	35.31	2719.3	39.64
500.	35.3	2719.7	39.65
500.3	35.3	2720.	39.65
500.7	35.3	2720.3	39.65
501.	35.31	2720.7	39.65
501.3	35.3	2721.	39.65
501.7	35.29	2721.3	39.66
502.	35.31	2721.7	39.65
502.3	35.28	2722.	39.67
502.7	35.28	2722.3	39.64
503.	35.28	2722.7	39.65
503.3	35.28	2723.	39.67
503.7	35.26	2723.3	39.65
504.	35.31	2723.7	39.66
504.3	35.28	2724.	39.65
504.7	35.29	2724.3	39.64
505.	35.27	2724.7	39.65
505.3	35.29	2725.	39.66
505.7	35.29	2725.3	39.64
506.	35.29	2725.7	39.65
506.3	35.28	2726.	39.64
506.7	35.31	2726.3	39.64
507.	35.3	2726.7	39.65
507.3	35.31	2727.	39.65
507.7	35.3	2727.3	39.65

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
508.	35.3	2727.7	39.66
508.3	35.31	2728.	39.65
508.7	35.31	2728.3	39.63
509.	35.31	2728.7	39.66
509.3	35.33	2729.	39.64
509.7	35.32	2729.3	39.65
510.	35.31	2729.7	39.65
510.3	35.31	2730.	39.64
510.7	35.31	2730.3	39.65
511.	35.32	2730.7	39.65
511.3	35.3	2731.	39.66
511.7	35.32	2731.3	39.64
512.	35.33	2731.7	39.65
512.3	35.31	2732.	39.64
512.7	35.3	2732.3	39.64
513.	35.31	2732.7	39.65
513.3	35.3	2733.	39.64
513.7	35.29	2733.3	39.64
514.	35.32	2733.7	39.65
514.3	35.31	2734.	39.64
514.7	35.32	2734.3	39.63
515.	35.31	2734.7	39.65
515.3	35.31	2735.	39.63
515.7	35.33	2735.3	39.64
516.	35.34	2735.7	39.65
516.3	35.31	2736.	39.64
516.7	35.32	2736.3	39.65
517.	35.33	2736.7	39.66
517.3	35.32	2737.	39.64
517.7	35.32	2737.3	39.65
518.	35.33	2737.7	39.65
518.3	35.35	2738.	39.64
518.7	35.34	2738.3	39.65
519.	35.35	2738.7	39.66
519.3	35.34	2739.	39.66
519.7	35.36	2739.3	39.66
520.	35.33	2739.7	39.65
520.3	35.35	2740.	39.66
520.7	35.34	2740.3	39.66
521.	35.36	2740.7	39.65
521.3	35.36	2741.	39.66
521.7	35.36	2741.3	39.65
522.	35.36	2741.7	39.66
522.3	35.36	2742.	39.65
522.7	35.35	2742.3	39.67
523.	35.37	2742.7	39.66
523.3	35.38	2743.	39.67
523.7	35.36	2743.3	39.67
524.	35.36	2743.7	39.67
524.3	35.36	2744.	39.65
524.7	35.36	2744.3	39.68
525.	35.36	2744.7	39.64
525.3	35.34	2745.	39.67
525.7	35.34	2745.3	39.66
526.	35.35	2745.7	39.66
526.3	35.35	2746.	39.65
526.7	35.33	2746.3	39.66
527.	35.33	2746.7	39.65
527.3	35.34	2747.	39.65
527.7	35.34	2747.3	39.67
528.	35.34	2747.7	39.65
528.3	35.37	2748.	39.67
528.7	35.34	2748.3	39.66
529.	35.36	2748.7	39.65
529.3	35.35	2749.	39.66
529.7	35.36	2749.3	39.67

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
530.	35.38	2749.7	39.65
530.3	35.37	2750.	39.66
530.7	35.37	2750.3	39.66
531.	35.38	2750.7	39.65
531.3	35.38	2751.	39.67
531.7	35.39	2751.3	39.66
532.	35.39	2751.7	39.67
532.3	35.42	2752.	39.67
532.7	35.4	2752.3	39.66
533.	35.4	2752.7	39.67
533.3	35.39	2753.	39.67
533.7	35.4	2753.3	39.67
534.	35.39	2753.7	39.65
534.3	35.42	2754.	39.68
534.7	35.4	2754.3	39.66
535.	35.42	2754.7	39.69
535.3	35.42	2755.	39.69
535.7	35.42	2755.3	39.66
536.	35.44	2755.7	39.67
536.3	35.42	2756.	39.66
536.7	35.44	2756.3	39.67
537.	35.42	2756.7	39.67
537.3	35.44	2757.	39.67
537.7	35.44	2757.3	39.67
538.	35.45	2757.7	39.67
538.3	35.44	2758.	39.66
538.7	35.44	2758.3	39.66
539.	35.46	2758.7	39.66
539.3	35.45	2759.	39.67
539.7	35.45	2759.3	39.65
540.	35.47	2759.7	39.65
540.3	35.46	2760.	39.65
540.7	35.47	2760.3	39.65
541.	35.46	2760.7	39.65
541.3	35.48	2761.	39.65
541.7	35.47	2761.3	39.66
542.	35.48	2761.7	39.65
542.3	35.48	2762.	39.64
542.7	35.48	2762.3	39.65
543.	35.5	2762.7	39.63
543.3	35.51	2763.	39.65
543.7	35.51	2763.3	39.63
544.	35.51	2763.7	39.63
544.3	35.5	2764.	39.61
544.7	35.5	2764.3	39.59
545.	35.5	2764.7	39.59
545.3	35.51	2765.	39.6
545.7	35.52	2765.3	39.59
546.	35.53	2765.7	39.59
546.3	35.53	2766.	39.57
546.7	35.53	2766.3	39.56
547.	35.53	2766.7	39.57
547.3	35.54	2767.	39.57
547.7	35.53	2767.3	39.55
548.	35.54	2767.7	39.54
548.3	35.54	2768.	39.52
548.7	35.55	2768.3	39.54
549.	35.55	2768.7	39.53
549.3	35.56	2769.	39.53
549.7	35.55	2769.3	39.52
550.	35.56	2769.7	39.5
550.3	35.56	2770.	39.5
550.7	35.56	2770.3	39.49
551.	35.59	2770.7	39.49
551.3	35.58	2771.	39.49
551.7	35.58	2771.3	39.49

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
552.	35.57	2771.7	39.49
552.3	35.58	2772.	39.49
552.7	35.6	2772.3	39.47
553.	35.6	2772.7	39.47
553.3	35.61	2773.	39.47
553.7	35.6	2773.3	39.45
554.	35.6	2773.7	39.45
554.3	35.62	2774.	39.45
554.7	35.62	2774.3	39.45
555.	35.62	2774.7	39.46
555.3	35.61	2775.	39.45
555.7	35.61	2775.3	39.43
556.	35.64	2775.7	39.46
556.3	35.62	2776.	39.45
556.7	35.6	2776.3	39.43
557.	35.64	2776.7	39.45
557.3	35.63	2777.	39.43
557.7	35.63	2777.3	39.43
558.	35.63	2777.7	39.43
558.3	35.66	2778.	39.43
558.7	35.64	2778.3	39.4
559.	35.63	2778.7	39.43
559.3	35.63	2779.	39.43
559.7	35.64	2779.3	39.43
560.	35.64	2779.7	39.43
560.3	35.62	2780.	39.43
560.7	35.64	2780.3	39.46
561.	35.63	2780.7	39.47
561.3	35.64	2781.	39.47
561.7	35.65	2781.3	39.48
562.	35.64	2781.7	39.47
562.3	35.65	2782.	39.5
562.7	35.63	2782.3	39.49
563.	35.62	2782.7	39.5
563.3	35.64	2783.	39.5
563.7	35.65	2783.3	39.53
564.	35.63	2783.7	39.52
564.3	35.62	2784.	39.53
564.7	35.64	2784.3	39.53
565.	35.64	2784.7	39.54
565.3	35.63	2785.	39.54
565.7	35.63	2785.3	39.56
566.	35.65	2785.7	39.55
566.3	35.62	2786.	39.56
566.7	35.62	2786.3	39.56
567.	35.64	2786.7	39.57
567.3	35.62	2787.	39.57
567.7	35.62	2787.3	39.57
568.	35.62	2787.7	39.59
568.3	35.61	2788.	39.58
568.7	35.61	2788.3	39.58
569.	35.62	2788.7	39.59
569.3	35.62	2789.	39.58
569.7	35.61	2789.3	39.6
570.	35.61	2789.7	39.59
570.3	35.63	2790.	39.59
570.7	35.62	2790.3	39.59
571.	35.62	2790.7	39.61
571.3	35.62	2791.	39.6
571.7	35.62	2791.3	39.61
572.	35.61	2791.7	39.6
572.3	35.62	2792.	39.6
572.7	35.63	2792.3	39.61
573.	35.61	2792.7	39.6
573.3	35.62	2793.	39.61
573.7	35.64	2793.3	39.59

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
574.	35.63	2793.7	39.61
574.3	35.63	2794.	39.6
574.7	35.64	2794.3	39.62
575.	35.64	2794.7	39.62
575.3	35.65	2795.	39.62
575.7	35.63	2795.3	39.62
576.	35.66	2795.7	39.62
576.3	35.65	2796.	39.63
576.7	35.67	2796.3	39.63
577.	35.67	2796.7	39.63
577.3	35.65	2797.	39.65
577.7	35.67	2797.3	39.63
578.	35.66	2797.7	39.66
578.3	35.68	2798.	39.64
578.7	35.67	2798.3	39.65
579.	35.66	2798.7	39.65
579.3	35.68	2799.	39.65
579.7	35.67	2799.3	39.65
580.	35.68	2799.7	39.66
580.3	35.66	2800.	39.66
580.7	35.66	2800.3	39.67
581.	35.67	2800.7	39.66
581.3	35.67	2801.	39.68
581.7	35.68	2801.3	39.67
582.	35.66	2801.7	39.68
582.3	35.69	2802.	39.68
582.7	35.67	2802.3	39.67
583.	35.69	2802.7	39.69
583.3	35.68	2803.	39.68
583.7	35.68	2803.3	39.66
584.	35.68	2803.7	39.66
584.3	35.67	2804.	39.69
584.7	35.69	2804.3	39.67
585.	35.68	2804.7	39.7
585.3	35.69	2805.	39.69
585.7	35.69	2805.3	39.69
586.	35.68	2805.7	39.7
586.3	35.69	2806.	39.69
586.7	35.7	2806.3	39.69
587.	35.71	2806.7	39.7
587.3	35.71	2807.	39.69
587.7	35.7	2807.3	39.69
588.	35.71	2807.7	39.7
588.3	35.7	2808.	39.71
588.7	35.71	2808.3	39.76
589.	35.69	2808.7	39.77
589.3	35.7	2809.	39.78
589.7	35.71	2809.3	39.76
590.	35.72	2809.7	39.77
590.3	35.71	2810.	39.77
590.7	35.7	2810.3	39.77
591.	35.71	2810.7	39.76
591.3	35.71	2811.	39.77
591.7	35.71	2811.3	39.78
592.	35.7	2811.7	39.77
592.3	35.72	2812.	39.76
592.7	35.72	2812.3	39.77
593.	35.72	2812.7	39.76
593.3	35.71	2813.	39.76
593.7	35.72	2813.3	39.76
594.	35.72	2813.7	39.77
594.3	35.71	2814.	39.77
594.7	35.73	2814.3	39.76
595.	35.72	2814.7	39.77
595.3	35.71	2815.	39.77
595.7	35.73	2815.3	39.75

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
596.	35.72	2815.7	39.77
596.3	35.73	2816.	39.76
596.7	35.74	2816.3	39.77
597.	35.72	2816.7	39.76
597.3	35.75	2817.	39.78
597.7	35.74	2817.3	39.77
598.	35.73	2817.7	39.76
598.3	35.74	2818.	39.76
598.7	35.74	2818.3	39.75
599.	35.75	2818.7	39.76
599.3	35.75	2819.	39.76
599.7	35.76	2819.3	39.75
600.	35.75	2819.7	39.74
600.3	35.74	2820.	39.75
600.7	35.75	2820.3	39.74
601.	35.77	2820.7	39.73
601.3	35.77	2821.	39.73
601.7	35.78	2821.3	39.73
602.	35.77	2821.7	39.74
602.3	35.77	2822.	39.73
602.7	35.78	2822.3	39.74
603.	35.78	2822.7	39.74
603.3	35.78	2823.	39.72
603.7	35.78	2823.3	39.72
604.	35.8	2823.7	39.72
604.3	35.78	2824.	39.72
604.7	35.82	2824.3	39.74
605.	35.78	2824.7	39.75
605.3	35.79	2825.	39.74
605.7	35.82	2825.3	39.75
606.	35.8	2825.7	39.73
606.3	35.8	2826.	39.74
606.7	35.82	2826.3	39.73
607.	35.8	2826.7	39.73
607.3	35.8	2827.	39.73
607.7	35.82	2827.3	39.73
608.	35.82	2827.7	39.72
608.3	35.82	2828.	39.73
608.7	35.83	2828.3	39.72
609.	35.85	2828.7	39.72
609.3	35.82	2829.	39.71
609.7	35.85	2829.3	39.73
610.	35.83	2829.7	39.7
610.3	35.83	2830.	39.72
610.7	35.82	2830.3	39.7
611.	35.83	2830.7	39.7
611.3	35.85	2831.	39.69
611.7	35.82	2831.3	39.69
612.	35.83	2831.7	39.69
612.3	35.82	2832.	39.66
612.7	35.83	2832.3	39.67
613.	35.82	2832.7	39.67
613.3	35.83	2833.	39.68
613.7	35.82	2833.3	39.65
614.	35.82	2833.7	39.67
614.3	35.83	2834.	39.65
614.7	35.85	2834.3	39.65
615.	35.83	2834.7	39.64
615.3	35.83	2835.	39.66
615.7	35.83	2835.3	39.64
616.	35.85	2835.7	39.63
616.3	35.85	2836.	39.64
616.7	35.85	2836.3	39.62
617.	35.87	2836.7	39.62
617.3	35.85	2837.	39.61
617.7	35.85	2837.3	39.63

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
618.	35.85	2837.7	39.61
618.3	35.85	2838.	39.6
618.7	35.85	2838.3	39.6
619.	35.85	2838.7	39.61
619.3	35.85	2839.	39.6
619.7	35.85	2839.3	39.58
620.	35.85	2839.7	39.59
620.3	35.85	2840.	39.6
620.7	35.85	2840.3	39.57
621.	35.85	2840.7	39.59
621.3	35.87	2841.	39.58
621.7	35.82	2841.3	39.59
622.	35.82	2841.7	39.59
622.3	35.85	2842.	39.56
622.7	35.85	2842.3	39.58
623.	35.83	2842.7	39.57
623.3	35.82	2843.	39.57
623.7	35.83	2843.3	39.57
624.	35.83	2843.7	39.56
624.3	35.82	2844.	39.57
624.7	35.82	2844.3	39.55
625.	35.82	2844.7	39.56
625.3	35.83	2845.	39.55
625.7	35.8	2845.3	39.57
626.	35.82	2845.7	39.56
626.3	35.83	2846.	39.55
626.7	35.85	2846.3	39.54
627.	35.83	2846.7	39.56
627.3	35.82	2847.	39.55
627.7	35.85	2847.3	39.55
628.	35.83	2847.7	39.54
628.3	35.82	2848.	39.53
628.7	35.82	2848.3	39.55
629.	35.85	2848.7	39.55
629.3	35.82	2849.	39.53
629.7	35.85	2849.3	39.53
630.	35.82	2849.7	39.54
630.3	35.82	2850.	39.53
630.7	35.82	2850.3	39.54
631.	35.8	2850.7	39.52
631.3	35.82	2851.	39.52
631.7	35.8	2851.3	39.52
632.	35.82	2851.7	39.53
632.3	35.79	2852.	39.52
632.7	35.8	2852.3	39.52
633.	35.79	2852.7	39.5
633.3	35.79	2853.	39.5
633.7	35.82	2853.3	39.52
634.	35.82	2853.7	39.52
634.3	35.79	2854.	39.5
634.7	35.82	2854.3	39.5
635.	35.82	2854.7	39.5
635.3	35.82	2855.	39.5
635.7	35.8	2855.3	39.49
636.	35.8	2855.7	39.5
636.3	35.82	2856.	39.5
636.7	35.83	2856.3	39.5
637.	35.82	2856.7	39.49
637.3	35.82	2857.	39.5
637.7	35.82	2857.3	39.5
638.	35.83	2857.7	39.49
638.3	35.82	2858.	39.49
638.7	35.82	2858.3	39.49
639.	35.82	2858.7	39.49
639.3	35.87	2859.	39.49
639.7	35.85	2859.3	39.5

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
640.	35.85	2859.7	39.49
640.3	35.85	2860.	39.48
640.7	35.82	2860.3	39.5
641.	35.83	2860.7	39.49
641.3	35.85	2861.	39.49
641.7	35.88	2861.3	39.49
642.	35.85	2861.7	39.5
642.3	35.87	2862.	39.5
642.7	35.85	2862.3	39.48
643.	35.87	2862.7	39.5
643.3	35.87	2863.	39.49
643.7	35.87	2863.3	39.5
644.	35.88	2863.7	39.49
644.3	35.88	2864.	39.48
644.7	35.88	2864.3	39.5
645.	35.88	2864.7	39.5
645.3	35.88	2865.	39.5
645.7	35.87	2865.3	39.5
646.	35.87	2865.7	39.5
646.3	35.85	2866.	39.49
646.7	35.85	2866.3	39.48
647.	35.83	2866.7	39.5
647.3	35.85	2867.	39.5
647.7	35.83	2867.3	39.49
648.	35.83	2867.7	39.5
648.3	35.83	2868.	39.5
648.7	35.82	2868.3	39.49
649.	35.82	2868.7	39.49
649.3	35.82	2869.	39.49
649.7	35.83	2869.3	39.49
650.	35.82	2869.7	39.5
650.3	35.82	2870.	39.5
650.7	35.8	2870.3	39.49
651.	35.8	2870.7	39.48
651.3	35.8	2871.	39.5
651.7	35.79	2871.3	39.5
652.	35.82	2871.7	39.49
652.3	35.79	2872.	39.49
652.7	35.82	2872.3	39.49
653.	35.78	2872.7	39.49
653.3	35.79	2873.	39.5
653.7	35.78	2873.3	39.48
654.	35.82	2873.7	39.48
654.3	35.79	2874.	39.48
654.7	35.82	2874.3	39.47
655.	35.8	2874.7	39.49
655.3	35.82	2875.	39.49
655.7	35.79	2875.3	39.49
656.	35.82	2875.7	39.48
656.3	35.8	2876.	39.48
656.7	35.79	2876.3	39.48
657.	35.82	2876.7	39.47
657.3	35.82	2877.	39.48
657.7	35.82	2877.3	39.48
658.	35.8	2877.7	39.47
658.3	35.82	2878.	39.48
658.7	35.82	2878.3	39.48
659.	35.83	2878.7	39.48
659.3	35.82	2879.	39.48
659.7	35.83	2879.3	39.47
660.	35.85	2879.7	39.45
660.3	35.83	2880.	39.43
660.7	35.85	2880.3	39.43
661.	35.83	2880.7	39.45
661.3	35.85	2881.	39.43
661.7	35.85	2881.3	39.43

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
662.	35.83	2881.7	39.42
662.3	35.85	2882.	39.43
662.7	35.82	2882.3	39.42
663.	35.85	2882.7	39.43
663.3	35.85	2883.	39.42
663.7	35.85	2883.3	39.43
664.	35.87	2883.7	39.43
664.3	35.87	2884.	39.43
664.7	35.85	2884.3	39.43
665.	35.88	2884.7	39.43
665.3	35.85	2885.	39.43
665.7	35.87	2885.3	39.43
666.	35.89	2885.7	39.48
666.3	35.85	2886.	39.47
666.7	35.87	2886.3	39.47
667.	35.85	2886.7	39.45
667.3	35.85	2887.	39.47
667.7	35.87	2887.3	39.45
668.	35.87	2887.7	39.46
668.3	35.88	2888.	39.45
668.7	35.88	2888.3	39.46
669.	35.85	2888.7	39.45
669.3	35.88	2889.	39.43
669.7	35.9	2889.3	39.43
670.	35.85	2889.7	39.43
670.3	35.87	2890.	39.43
670.7	35.85	2890.3	39.43
671.	35.87	2890.7	39.46
671.3	35.85	2891.	39.45
671.7	35.85	2891.3	39.43
672.	35.87	2891.7	39.43
672.3	35.85	2892.	39.45
672.7	35.85	2892.3	39.43
673.	35.85	2892.7	39.43
673.3	35.85	2893.	39.43
673.7	35.85	2893.3	39.43
674.	35.85	2893.7	39.43
674.3	35.85	2894.	39.42
674.7	35.85	2894.3	39.42
675.	35.85	2894.7	39.4
675.3	35.85	2895.	39.43
675.7	35.85	2895.3	39.42
676.	35.83	2895.7	39.43
676.3	35.85	2896.	39.42
676.7	35.83	2896.3	39.4
677.	35.85	2896.7	39.39
677.3	35.85	2897.	39.4
677.7	35.85	2897.3	39.4
678.	35.85	2897.7	39.39
678.3	35.87	2898.	39.39
678.7	35.85	2898.3	39.4
679.	35.85	2898.7	39.39
679.3	35.85	2899.	39.42
679.7	35.83	2899.3	39.4
680.	35.85	2899.7	39.4
680.3	35.85	2900.	39.42
680.7	35.83	2900.3	39.42
681.	35.85	2900.7	39.4
681.3	35.85	2901.	39.42
681.7	35.82	2901.3	39.43
682.	35.85	2901.7	39.42
682.3	35.82	2902.	39.43
682.7	35.82	2902.3	39.4
683.	35.83	2902.7	39.42
683.3	35.82	2903.	39.42
683.7	35.83	2903.3	39.42

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
684.	35.82	2903.7	39.42
684.3	35.83	2904.	39.42
684.7	35.83	2904.3	39.42
685.	35.85	2904.7	39.42
685.3	35.85	2905.	39.4
685.7	35.83	2905.3	39.39
686.	35.85	2905.7	39.4
686.3	35.85	2906.	39.39
686.7	35.85	2906.3	39.38
687.	35.85	2906.7	39.37
687.3	35.87	2907.	39.38
687.7	35.85	2907.3	39.37
688.	35.85	2907.7	39.36
688.3	35.85	2908.	39.34
688.7	35.85	2908.3	39.36
689.	35.85	2908.7	39.36
689.3	35.88	2909.	39.38
689.7	35.85	2909.3	39.37
690.	35.87	2909.7	39.39
690.3	35.88	2910.	39.38
690.7	35.87	2910.3	39.38
691.	35.89	2910.7	39.38
691.3	35.89	2911.	39.39
691.7	35.88	2911.3	39.42
692.	35.9	2911.7	39.4
692.3	35.92	2912.	39.43
692.7	35.9	2912.3	39.42
693.	35.91	2912.7	39.4
693.3	35.92	2913.	39.43
693.7	35.92	2913.3	39.42
694.	35.91	2913.7	39.42
694.3	35.92	2914.	39.43
694.7	35.92	2914.3	39.42
695.	35.92	2914.7	39.43
695.3	35.93	2915.	39.43
695.7	35.93	2915.3	39.43
696.	35.92	2915.7	39.43
696.3	35.92	2916.	39.43
696.7	35.94	2916.3	39.42
697.	35.93	2916.7	39.43
697.3	35.92	2917.	39.43
697.7	35.95	2917.3	39.43
698.	35.93	2917.7	39.43
698.3	35.93	2918.	39.43
698.7	35.94	2918.3	39.43
699.	35.95	2918.7	39.43
699.3	35.93	2919.	39.43
699.7	35.93	2919.3	39.42
700.	35.93	2919.7	39.43
700.3	35.93	2920.	39.43
700.7	35.93	2920.3	39.43
701.	35.92	2920.7	39.43
701.3	35.92	2921.	39.43
701.7	35.93	2921.3	39.43
702.	35.93	2921.7	39.43
702.3	35.92	2922.	39.43
702.7	35.93	2922.3	39.43
703.	35.92	2922.7	39.43
703.3	35.91	2923.	39.42
703.7	35.91	2923.3	39.42
704.	35.9	2923.7	39.42
704.3	35.9	2924.	39.4
704.7	35.91	2924.3	39.42
705.	35.9	2924.7	39.4
705.3	35.93	2925.	39.42
705.7	35.92	2925.3	39.45

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
706.	35.92	2925.7	39.43
706.3	35.9	2926.	39.43
706.7	35.93	2926.3	39.43
707.	35.91	2926.7	39.42
707.3	35.9	2927.	39.43
707.7	35.9	2927.3	39.42
708.	35.91	2927.7	39.42
708.3	35.89	2928.	39.42
708.7	35.9	2928.3	39.42
709.	35.93	2928.7	39.42
709.3	35.93	2929.	39.4
709.7	35.92	2929.3	39.4
710.	35.94	2929.7	39.38
710.3	35.93	2930.	39.38
710.7	35.95	2930.3	39.39
711.	35.94	2930.7	39.38
711.3	35.95	2931.	39.39
711.7	35.96	2931.3	39.4
712.	35.98	2931.7	39.38
712.3	35.99	2932.	39.38
712.7	35.98	2932.3	39.36
713.	35.99	2932.7	39.36
713.3	35.99	2933.	39.36
713.7	36.01	2933.3	39.36
714.	36.01	2933.7	39.35
714.3	36.02	2934.	39.35
714.7	36.03	2934.3	39.35
715.	36.01	2934.7	39.36
715.3	36.03	2935.	39.37
715.7	36.03	2935.3	39.35
716.	36.03	2935.7	39.34
716.3	36.02	2936.	39.34
716.7	36.04	2936.3	39.35
717.	36.04	2936.7	39.34
717.3	36.03	2937.	39.33
717.7	36.03	2937.3	39.34
718.	36.04	2937.7	39.33
718.3	36.03	2938.	39.34
718.7	36.05	2938.3	39.33
719.	36.05	2938.7	39.32
719.3	36.05	2939.	39.32
719.7	36.06	2939.3	39.32
720.	36.06	2939.7	39.33
720.3	36.06	2940.	39.32
720.7	36.06	2940.3	39.31
721.	36.08	2940.7	39.31
721.3	36.08	2941.	39.32
721.7	36.09	2941.3	39.31
722.	36.09	2941.7	39.3
722.3	36.1	2942.	39.31
722.7	36.11	2942.3	39.32
723.	36.11	2942.7	39.31
723.3	36.11	2943.	39.29
723.7	36.12	2943.3	39.3
724.	36.13	2943.7	39.32
724.3	36.13	2944.	39.31
724.7	36.16	2944.3	39.28
725.	36.15	2944.7	39.3
725.3	36.14	2945.	39.3
725.7	36.13	2945.3	39.29
726.	36.14	2945.7	39.3
726.3	36.15	2946.	39.31
726.7	36.17	2946.3	39.3
727.	36.17	2946.7	39.3
727.3	36.18	2947.	39.3
727.7	36.16	2947.3	39.3

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
728.	36.16	2947.7	39.3
728.3	36.17	2948.	39.31
728.7	36.18	2948.3	39.32
729.	36.18	2948.7	39.31
729.3	36.19	2949.	39.32
729.7	36.19	2949.3	39.34
730.	36.2	2949.7	39.32
730.3	36.17	2950.	39.31
730.7	36.19	2950.3	39.31
731.	36.2	2950.7	39.31
731.3	36.21	2951.	39.32
731.7	36.2	2951.3	39.32
732.	36.22	2951.7	39.33
732.3	36.18	2952.	39.33
732.7	36.2	2952.3	39.32
733.	36.21	2952.7	39.33
733.3	36.2	2953.	39.34
733.7	36.22	2953.3	39.34
734.	36.21	2953.7	39.34
734.3	36.19	2954.	39.33
734.7	36.19	2954.3	39.33
735.	36.19	2954.7	39.33
735.3	36.19	2955.	39.32
735.7	36.2	2955.3	39.32
736.	36.21	2955.7	39.33
736.3	36.2	2956.	39.34
736.7	36.19	2956.3	39.33
737.	36.19	2956.7	39.32
737.3	36.2	2957.	39.31
737.7	36.21	2957.3	39.31
738.	36.21	2957.7	39.32
738.3	36.19	2958.	39.3
738.7	36.18	2958.3	39.29
739.	36.18	2958.7	39.3
739.3	36.19	2959.	39.3
739.7	36.2	2959.3	39.3
740.	36.18	2959.7	39.29
740.3	36.17	2960.	39.28
740.7	36.18	2960.3	39.29
741.	36.19	2960.7	39.29
741.3	36.21	2961.	39.27
741.7	36.19	2961.3	39.27
742.	36.18	2961.7	39.28
742.3	36.2	2962.	39.26
742.7	36.2	2962.3	39.26
743.	36.19	2962.7	39.27
743.3	36.2	2963.	39.25
743.7	36.19	2963.3	39.25
744.	36.18	2963.7	39.24
744.3	36.21	2964.	39.22
744.7	36.2	2964.3	39.24
745.	36.2	2964.7	39.25
745.3	36.18	2965.	39.22
745.7	36.18	2965.3	39.23
746.	36.18	2965.7	39.22
746.3	36.16	2966.	39.23
746.7	36.17	2966.3	39.23
747.	36.17	2966.7	39.2
747.3	36.16	2967.	39.22
747.7	36.17	2967.3	39.22
748.	36.17	2967.7	39.2
748.3	36.17	2968.	39.22
748.7	36.16	2968.3	39.23
749.	36.15	2968.7	39.21
749.3	36.14	2969.	39.22
749.7	36.13	2969.3	39.2

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
750.	36.13	2969.7	39.2
750.3	36.11	2970.	39.22
750.7	36.11	2970.3	39.2
751.	36.11	2970.7	39.21
751.3	36.12	2971.	39.2
751.7	36.12	2971.3	39.18
752.	36.12	2971.7	39.19
752.3	36.12	2972.	39.2
752.7	36.12	2972.3	39.19
753.	36.11	2972.7	39.2
753.3	36.12	2973.	39.2
753.7	36.11	2973.3	39.18
754.	36.11	2973.7	39.19
754.3	36.09	2974.	39.19
754.7	36.1	2974.3	39.18
755.	36.09	2974.7	39.2
755.3	36.08	2975.	39.17
755.7	36.09	2975.3	39.17
756.	36.1	2975.7	39.19
756.3	36.09	2976.	39.2
756.7	36.09	2976.3	39.18
757.	36.1	2976.7	39.19
757.3	36.09	2977.	39.19
757.7	36.09	2977.3	39.21
758.	36.1	2977.7	39.18
758.3	36.09	2978.	39.2
758.7	36.1	2978.3	39.2
759.	36.09	2978.7	39.2
759.3	36.1	2979.	39.19
759.7	36.08	2979.3	39.19
760.	36.09	2979.7	39.21
760.3	36.1	2980.	39.21
760.7	36.1	2980.3	39.2
761.	36.08	2980.7	39.21
761.3	36.09	2981.	39.21
761.7	36.09	2981.3	39.21
762.	36.08	2981.7	39.2
762.3	36.07	2982.	39.21
762.7	36.08	2982.3	39.21
763.	36.08	2982.7	39.2
763.3	36.07	2983.	39.2
763.7	36.08	2983.3	39.22
764.	36.09	2983.7	39.22
764.3	36.09	2984.	39.21
764.7	36.08	2984.3	39.22
765.	36.08	2984.7	39.21
765.3	36.09	2985.	39.21
765.7	36.1	2985.3	39.2
766.	36.09	2985.7	39.21
766.3	36.08	2986.	39.2
766.7	36.08	2986.3	39.19
767.	36.09	2986.7	39.2
767.3	36.09	2987.	39.21
767.7	36.09	2987.3	39.21
768.	36.09	2987.7	39.2
768.3	36.09	2988.	39.2
768.7	36.1	2988.3	39.2
769.	36.1	2988.7	39.2
769.3	36.1	2989.	39.21
769.7	36.11	2989.3	39.2
770.	36.09	2989.7	39.2
770.3	36.1	2990.	39.19
770.7	36.1	2990.3	39.18
771.	36.1	2990.7	39.19
771.3	36.1	2991.	39.18
771.7	36.09	2991.3	39.19

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
772.	36.09	2991.7	39.18
772.3	36.1	2992.	39.17
772.7	36.09	2992.3	39.19
773.	36.1	2992.7	39.18
773.3	36.09	2993.	39.19
773.7	36.1	2993.3	39.18
774.	36.13	2993.7	39.19
774.3	36.13	2994.	39.17
774.7	36.12	2994.3	39.16
775.	36.14	2994.7	39.17
775.3	36.15	2995.	39.16
775.7	36.13	2995.3	39.17
776.	36.14	2995.7	39.15
776.3	36.14	2996.	39.16
776.7	36.13	2996.3	39.14
777.	36.15	2996.7	39.14
777.3	36.15	2997.	39.14
777.7	36.15	2997.3	39.13
778.	36.15	2997.7	39.13
778.3	36.16	2998.	39.12
778.7	36.14	2998.3	39.1
779.	36.14	2998.7	39.12
779.3	36.17	2999.	39.1
779.7	36.16	2999.3	39.1
780.	36.15	2999.7	39.1
780.3	36.17	3000.	39.1
780.7	36.17	3000.3	39.1
781.	36.17	3000.7	39.1
781.3	36.18	3001.	39.1
781.7	36.16	3001.3	39.1
782.	36.16	3001.7	39.1
782.3	36.18	3002.	39.1
782.7	36.16	3002.3	39.1
783.	36.18	3002.7	39.09
783.3	36.2	3003.	39.1
783.7	36.17	3003.3	39.07
784.	36.19	3003.7	39.1
784.3	36.19	3004.	39.1
784.7	36.19	3004.3	39.09
785.	36.19	3004.7	39.09
785.3	36.21	3005.	39.09
785.7	36.2	3005.3	39.09
786.	36.2	3005.7	39.07
786.3	36.2	3006.	39.06
786.7	36.21	3006.3	39.06
787.	36.21	3006.7	39.06
787.3	36.22	3007.	39.06
787.7	36.22	3007.3	39.05
788.	36.22	3007.7	39.06
788.3	36.22	3008.	39.05
788.7	36.21	3008.3	39.06
789.	36.23	3008.7	39.05
789.3	36.25	3009.	39.06
789.7	36.22	3009.3	39.05
790.	36.25	3009.7	39.06
790.3	36.25	3010.	39.05
790.7	36.25	3010.3	39.06
791.	36.26	3010.7	39.06
791.3	36.25	3011.	39.06
791.7	36.26	3011.3	39.05
792.	36.25	3011.7	39.06
792.3	36.26	3012.	39.03
792.7	36.28	3012.3	39.06
793.	36.28	3012.7	39.06
793.3	36.25	3013.	39.06
793.7	36.28	3013.3	39.06

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
794.	36.26	3013.7	39.06
794.3	36.28	3014.	39.06
794.7	36.3	3014.3	39.06
795.	36.29	3014.7	39.06
795.3	36.3	3015.	39.07
795.7	36.3	3015.3	39.06
796.	36.29	3015.7	39.06
796.3	36.3	3016.	39.06
796.7	36.29	3016.3	39.07
797.	36.28	3016.7	39.07
797.3	36.3	3017.	39.08
797.7	36.3	3017.3	39.06
798.	36.3	3017.7	39.08
798.3	36.3	3018.	39.06
798.7	36.29	3018.3	39.08
799.	36.29	3018.7	39.08
799.3	36.3	3019.	39.08
799.7	36.3	3019.3	39.08
800.	36.27	3019.7	39.07
800.3	36.29	3020.	39.1
800.7	36.29	3020.3	39.06
801.	36.3	3020.7	39.08
801.3	36.3	3021.	39.06
801.7	36.31	3021.3	39.1
802.	36.3	3021.7	39.06
802.3	36.3	3022.	39.09
802.7	36.31	3022.3	39.07
803.	36.3	3022.7	39.1
803.3	36.3	3023.	39.1
803.7	36.31	3023.3	39.09
804.	36.32	3023.7	39.1
804.3	36.3	3024.	39.09
804.7	36.32	3024.3	39.1
805.	36.31	3024.7	39.09
805.3	36.32	3025.	39.1
805.7	36.32	3025.3	39.1
806.	36.33	3025.7	39.11
806.3	36.32	3026.	39.12
806.7	36.32	3026.3	39.1
807.	36.34	3026.7	39.1
807.3	36.32	3027.	39.1
807.7	36.33	3027.3	39.11
808.	36.34	3027.7	39.11
808.3	36.34	3028.	39.11
808.7	36.33	3028.3	39.11
809.	36.33	3028.7	39.1
809.3	36.33	3029.	39.11
809.7	36.35	3029.3	39.1
810.	36.35	3029.7	39.1
810.3	36.36	3030.	39.12
810.7	36.35	3030.3	39.11
811.	36.37	3030.7	39.11
811.3	36.35	3031.	39.13
811.7	36.34	3031.3	39.11
812.	36.37	3031.7	39.12
812.3	36.37	3032.	39.1
812.7	36.37	3032.3	39.13
813.	36.36	3032.7	39.11
813.3	36.37	3033.	39.12
813.7	36.36	3033.3	39.12
814.	36.37	3033.7	39.11
814.3	36.36	3034.	39.12
814.7	36.38	3034.3	39.12
815.	36.36	3034.7	39.12
815.3	36.37	3035.	39.12
815.7	36.36	3035.3	39.12

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
816.	36.37	3035.7	39.12
816.3	36.36	3036.	39.12
816.7	36.39	3036.3	39.1
817.	36.4	3036.7	39.12
817.3	36.37	3037.	39.12
817.7	36.38	3037.3	39.13
818.	36.38	3037.7	39.12
818.3	36.39	3038.	39.12
818.7	36.39	3038.3	39.12
819.	36.41	3038.7	39.11
819.3	36.4	3039.	39.12
819.7	36.4	3039.3	39.1
820.	36.4	3039.7	39.09
820.3	36.39	3040.	39.11
820.7	36.41	3040.3	39.1
821.	36.4	3040.7	39.11
821.3	36.41	3041.	39.12
821.7	36.39	3041.3	39.11
822.	36.42	3041.7	39.14
822.3	36.41	3042.	39.14
822.7	36.42	3042.3	39.15
823.	36.41	3042.7	39.16
823.3	36.4	3043.	39.14
823.7	36.4	3043.3	39.15
824.	36.38	3043.7	39.16
824.3	36.39	3044.	39.14
824.7	36.41	3044.3	39.14
825.	36.39	3044.7	39.14
825.3	36.4	3045.	39.15
825.7	36.4	3045.3	39.13
826.	36.4	3045.7	39.14
826.3	36.41	3046.	39.14
826.7	36.39	3046.3	39.15
827.	36.39	3046.7	39.15
827.3	36.4	3047.	39.15
827.7	36.41	3047.3	39.13
828.	36.4	3047.7	39.14
828.3	36.41	3048.	39.13
828.7	36.4	3048.3	39.14
829.	36.4	3048.7	39.13
829.3	36.38	3049.	39.14
829.7	36.4	3049.3	39.13
830.	36.4	3049.7	39.14
830.3	36.4	3050.	39.14
830.7	36.4	3050.3	39.14
831.	36.41	3050.7	39.14
831.3	36.4	3051.	39.13
831.7	36.42	3051.3	39.14
832.	36.38	3051.7	39.14
832.3	36.39	3052.	39.13
832.7	36.39	3052.3	39.14
833.	36.38	3052.7	39.13
833.3	36.4	3053.	39.14
833.7	36.4	3053.3	39.12
834.	36.39	3053.7	39.13
834.3	36.41	3054.	39.15
834.7	36.4	3054.3	39.13
835.	36.38	3054.7	39.14
835.3	36.38	3055.	39.12
835.7	36.37	3055.3	39.12
836.	36.38	3055.7	39.14
836.3	36.37	3056.	39.12
836.7	36.36	3056.3	39.14
837.	36.37	3056.7	39.13
837.3	36.35	3057.	39.13
837.7	36.36	3057.3	39.15

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
838.	36.34	3057.7	39.13
838.3	36.32	3058.	39.14
838.7	36.35	3058.3	39.15
839.	36.34	3058.7	39.13
839.3	36.32	3059.	39.15
839.7	36.34	3059.3	39.13
840.	36.32	3059.7	39.13
840.3	36.33	3060.	39.14
840.7	36.33	3060.3	39.13
841.	36.32	3060.7	39.14
841.3	36.34	3061.	39.15
841.7	36.32	3061.3	39.14
842.	36.33	3061.7	39.15
842.3	36.33	3062.	39.13
842.7	36.32	3062.3	39.13
843.	36.32	3062.7	39.14
843.3	36.32	3063.	39.12
843.7	36.33	3063.3	39.13
844.	36.35	3063.7	39.12
844.3	36.32	3064.	39.12
844.7	36.34	3064.3	39.13
845.	36.34	3064.7	39.11
845.3	36.33	3065.	39.12
845.7	36.33	3065.3	39.1
846.	36.35	3065.7	39.12
846.3	36.34	3066.	39.11
846.7	36.33	3066.3	39.1
847.	36.34	3066.7	39.1
847.3	36.32	3067.	39.12
847.7	36.33	3067.3	39.1
848.	36.34	3067.7	39.09
848.3	36.33	3068.	39.09
848.7	36.32	3068.3	39.09
849.	36.33	3068.7	39.09
849.3	36.34	3069.	39.08
849.7	36.33	3069.3	39.08
850.	36.33	3069.7	39.06
850.3	36.35	3070.	39.05
850.7	36.34	3070.3	39.06
851.	36.35	3070.7	39.06
851.3	36.34	3071.	39.05
851.7	36.34	3071.3	39.06
852.	36.34	3071.7	39.05
852.3	36.34	3072.	39.06
852.7	36.34	3072.3	39.02
853.	36.33	3072.7	39.05
853.3	36.33	3073.	39.05
853.7	36.35	3073.3	39.05
854.	36.34	3073.7	39.03
854.3	36.34	3074.	39.03
854.7	36.35	3074.3	39.03
855.	36.34	3074.7	39.04
855.3	36.34	3075.	39.03
855.7	36.35	3075.3	39.01
856.	36.34	3075.7	39.02
856.3	36.36	3076.	39.02
856.7	36.35	3076.3	39.02
857.	36.35	3076.7	39.02
857.3	36.35	3077.	39.03
857.7	36.34	3077.3	39.01
858.	36.35	3077.7	38.99
858.3	36.34	3078.	39.02
858.7	36.34	3078.3	39.01
859.	36.35	3078.7	39.01
859.3	36.35	3079.	39.01
859.7	36.33	3079.3	39.02

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
860.	36.36	3079.7	39.01
860.3	36.34	3080.	38.99
860.7	36.34	3080.3	38.99
861.	36.36	3080.7	39.01
861.3	36.34	3081.	39.01
861.7	36.34	3081.3	39.01
862.	36.36	3081.7	38.99
862.3	36.36	3082.	38.99
862.7	36.36	3082.3	38.99
863.	36.36	3082.7	38.99
863.3	36.35	3083.	38.99
863.7	36.37	3083.3	38.98
864.	36.38	3083.7	38.96
864.3	36.36	3084.	38.96
864.7	36.37	3084.3	38.96
865.	36.37	3084.7	38.98
865.3	36.36	3085.	38.96
865.7	36.37	3085.3	38.98
866.	36.38	3085.7	38.99
866.3	36.37	3086.	38.99
866.7	36.38	3086.3	38.99
867.	36.38	3086.7	38.99
867.3	36.38	3087.	38.99
867.7	36.38	3087.3	38.99
868.	36.39	3087.7	38.99
868.3	36.39	3088.	38.96
868.7	36.38	3088.3	39.01
869.	36.39	3088.7	38.96
869.3	36.39	3089.	38.98
869.7	36.4	3089.3	38.98
870.	36.4	3089.7	38.99
870.3	36.4	3090.	38.96
870.7	36.39	3090.3	38.99
871.	36.41	3090.7	39.01
871.3	36.39	3091.	38.99
871.7	36.4	3091.3	38.99
872.	36.41	3091.7	38.99
872.3	36.41	3092.	38.99
872.7	36.41	3092.3	38.98
873.	36.41	3092.7	38.98
873.3	36.41	3093.	38.98
873.7	36.4	3093.3	38.98
874.	36.39	3093.7	38.96
874.3	36.42	3094.	38.99
874.7	36.41	3094.3	38.99
875.	36.41	3094.7	38.96
875.3	36.41	3095.	38.96
875.7	36.41	3095.3	38.99
876.	36.42	3095.7	38.99
876.3	36.41	3096.	38.96
876.7	36.41	3096.3	38.98
877.	36.41	3096.7	38.96
877.3	36.43	3097.	38.96
877.7	36.42	3097.3	38.96
878.	36.43	3097.7	38.94
878.3	36.44	3098.	38.94
878.7	36.42	3098.3	38.94
879.	36.4	3098.7	38.92
879.3	36.41	3099.	38.91
879.7	36.41	3099.3	38.92
880.	36.42	3099.7	38.91
880.3	36.42	3100.	38.93
880.7	36.42	3100.3	38.91
881.	36.43	3100.7	38.9
881.3	36.42	3101.	38.9
881.7	36.41	3101.3	38.89

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
882.	36.43	3101.7	38.89
882.3	36.43	3102.	38.88
882.7	36.43	3102.3	38.89
883.	36.43	3102.7	38.89
883.3	36.42	3103.	38.88
883.7	36.44	3103.3	38.87
884.	36.41	3103.7	38.86
884.3	36.42	3104.	38.86
884.7	36.42	3104.3	38.84
885.	36.45	3104.7	38.84
885.3	36.44	3105.	38.86
885.7	36.42	3105.3	38.85
886.	36.42	3105.7	38.84
886.3	36.43	3106.	38.85
886.7	36.45	3106.3	38.85
887.	36.46	3106.7	38.85
887.3	36.44	3107.	38.85
887.7	36.45	3107.3	38.85
888.	36.47	3107.7	38.85
888.3	36.46	3108.	38.85
888.7	36.45	3108.3	38.85
889.	36.45	3108.7	38.86
889.3	36.46	3109.	38.85
889.7	36.47	3109.3	38.86
890.	36.46	3109.7	38.86
890.3	36.46	3110.	38.85
890.7	36.46	3110.3	38.86
891.	36.44	3110.7	38.85
891.3	36.46	3111.	38.85
891.7	36.46	3111.3	38.84
892.	36.47	3111.7	38.84
892.3	36.44	3112.	38.84
892.7	36.45	3112.3	38.84
893.	36.45	3112.7	38.84
893.3	36.47	3113.	38.83
893.7	36.46	3113.3	38.83
894.	36.46	3113.7	38.83
894.3	36.46	3114.	38.83
894.7	36.46	3114.3	38.84
895.	36.46	3114.7	38.83
895.3	36.46	3115.	38.84
895.7	36.45	3115.3	38.84
896.	36.45	3115.7	38.84
896.3	36.45	3116.	38.84
896.7	36.47	3116.3	38.82
897.	36.48	3116.7	38.83
897.3	36.47	3117.	38.84
897.7	36.45	3117.3	38.82
898.	36.45	3117.7	38.82
898.3	36.45	3118.	38.82
898.7	36.44	3118.3	38.81
899.	36.46	3118.7	38.81
899.3	36.46	3119.	38.8
899.7	36.48	3119.3	38.8
900.	36.47	3119.7	38.79
900.3	36.47	3120.	38.8
900.7	36.46	3120.3	38.8
901.	36.45	3120.7	38.8
901.3	36.46	3121.	38.8
901.7	36.46	3121.3	38.8
902.	36.48	3121.7	38.81
902.3	36.49	3122.	38.82
902.7	36.48	3122.3	38.82
903.	36.47	3122.7	38.81
903.3	36.48	3123.	38.81
903.7	36.47	3123.3	38.82

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
904.	36.47	3123.7	38.81
904.3	36.46	3124.	38.81
904.7	36.46	3124.3	38.8
905.	36.47	3124.7	38.81
905.3	36.48	3125.	38.81
905.7	36.48	3125.3	38.82
906.	36.49	3125.7	38.83
906.3	36.5	3126.	38.82
906.7	36.49	3126.3	38.83
907.	36.49	3126.7	38.82
907.3	36.49	3127.	38.82
907.7	36.48	3127.3	38.82
908.	36.46	3127.7	38.82
908.3	36.46	3128.	38.82
908.7	36.48	3128.3	38.83
909.	36.48	3128.7	38.82
909.3	36.47	3129.	38.83
909.7	36.49	3129.3	38.81
910.	36.47	3129.7	38.81
910.3	36.5	3130.	38.81
910.7	36.48	3130.3	38.82
911.	36.51	3130.7	38.82
911.3	36.51	3131.	38.8
911.7	36.52	3131.3	38.81
912.	36.51	3131.7	38.79
912.3	36.51	3132.	38.79
912.7	36.51	3132.3	38.78
913.	36.52	3132.7	38.78
913.3	36.51	3133.	38.77
913.7	36.52	3133.3	38.77
914.	36.53	3133.7	38.78
914.3	36.52	3134.	38.79
914.7	36.53	3134.3	38.79
915.	36.52	3134.7	38.78
915.3	36.53	3135.	38.78
915.7	36.53	3135.3	38.78
916.	36.54	3135.7	38.77
916.3	36.54	3136.	38.77
916.7	36.54	3136.3	38.78
917.	36.56	3136.7	38.78
917.3	36.55	3137.	38.78
917.7	36.54	3137.3	38.79
918.	36.54	3137.7	38.79
918.3	36.55	3138.	38.77
918.7	36.55	3138.3	38.77
919.	36.55	3138.7	38.77
919.3	36.56	3139.	38.76
919.7	36.56	3139.3	38.77
920.	36.56	3139.7	38.77
920.3	36.56	3140.	38.77
920.7	36.56	3140.3	38.74
921.	36.56	3140.7	38.76
921.3	36.56	3141.	38.76
921.7	36.55	3141.3	38.75
922.	36.56	3141.7	38.77
922.3	36.55	3142.	38.76
922.7	36.55	3142.3	38.76
923.	36.56	3142.7	38.76
923.3	36.55	3143.	38.77
923.7	36.54	3143.3	38.77
924.	36.55	3143.7	38.77
924.3	36.54	3144.	38.77
924.7	36.54	3144.3	38.78
925.	36.54	3144.7	38.78
925.3	36.53	3145.	38.77
925.7	36.55	3145.3	38.79

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
926.	36.55	3145.7	38.77
926.3	36.54	3146.	38.77
926.7	36.56	3146.3	38.76
927.	36.56	3146.7	38.77
927.3	36.56	3147.	38.77
927.7	36.56	3147.3	38.77
928.	36.54	3147.7	38.78
928.3	36.55	3148.	38.79
928.7	36.52	3148.3	38.79
929.	36.54	3148.7	38.8
929.3	36.54	3149.	38.79
929.7	36.54	3149.3	38.78
930.	36.54	3149.7	38.78
930.3	36.54	3150.	38.79
930.7	36.55	3150.3	38.8
931.	36.56	3150.7	38.78
931.3	36.54	3151.	38.79
931.7	36.54	3151.3	38.78
932.	36.54	3151.7	38.79
932.3	36.53	3152.	38.79
932.7	36.53	3152.3	38.79
933.	36.52	3152.7	38.79
933.3	36.53	3153.	38.79
933.7	36.53	3153.3	38.81
934.	36.54	3153.7	38.79
934.3	36.53	3154.	38.78
934.7	36.51	3154.3	38.78
935.	36.5	3154.7	38.79
935.3	36.51	3155.	38.79
935.7	36.52	3155.3	38.77
936.	36.52	3155.7	38.76
936.3	36.51	3156.	38.77
936.7	36.5	3156.3	38.79
937.	36.5	3156.7	38.8
937.3	36.49	3157.	38.78
937.7	36.49	3157.3	38.78
938.	36.49	3157.7	38.77
938.3	36.5	3158.	38.77
938.7	36.5	3158.3	38.78
939.	36.48	3158.7	38.77
939.3	36.48	3159.	38.77
939.7	36.48	3159.3	38.78
940.	36.48	3159.7	38.78
940.3	36.49	3160.	38.78
940.7	36.48	3160.3	38.77
941.	36.46	3160.7	38.75
941.3	36.47	3161.	38.77
941.7	36.48	3161.3	38.77
942.	36.48	3161.7	38.77
942.3	36.49	3162.	38.76
942.7	36.48	3162.3	38.77
943.	36.47	3162.7	38.78
943.3	36.46	3163.	38.76
943.7	36.46	3163.3	38.76
944.	36.47	3163.7	38.76
944.3	36.48	3164.	38.76
944.7	36.48	3164.3	38.75
945.	36.47	3164.7	38.75
945.3	36.48	3165.	38.75
945.7	36.48	3165.3	38.75
946.	36.47	3165.7	38.76
946.3	36.47	3166.	38.76
946.7	36.48	3166.3	38.76
947.	36.48	3166.7	38.75
947.3	36.49	3167.	38.74
947.7	36.49	3167.3	38.75

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
948.	36.5	3167.7	38.75
948.3	36.51	3168.	38.74
948.7	36.51	3168.3	38.73
949.	36.51	3168.7	38.75
949.3	36.49	3169.	38.76
949.7	36.51	3169.3	38.74
950.	36.51	3169.7	38.73
950.3	36.51	3170.	38.76
950.7	36.51	3170.3	38.76
951.	36.52	3170.7	38.75
951.3	36.53	3171.	38.74
951.7	36.53	3171.3	38.74
952.	36.54	3171.7	38.72
952.3	36.53	3172.	38.71
952.7	36.53	3172.3	38.73
953.	36.52	3172.7	38.74
953.3	36.52	3173.	38.72
953.7	36.52	3173.3	38.72
954.	36.52	3173.7	38.73
954.3	36.51	3174.	38.73
954.7	36.51	3174.3	38.72
955.	36.52	3174.7	38.73
955.3	36.52	3175.	38.73
955.7	36.53	3175.3	38.71
956.	36.53	3175.7	38.71
956.3	36.54	3176.	38.73
956.7	36.53	3176.3	38.72
957.	36.53	3176.7	38.72
957.3	36.53	3177.	38.71
957.7	36.52	3177.3	38.71
958.	36.52	3177.7	38.73
958.3	36.52	3178.	38.73
958.7	36.52	3178.3	38.73
959.	36.52	3178.7	38.72
959.3	36.53	3179.	38.74
959.7	36.51	3179.3	38.73
960.	36.52	3179.7	38.74
960.3	36.52	3180.	38.72
960.7	36.54	3180.3	38.71
961.	36.54	3180.7	38.71
961.3	36.55	3181.	38.74
961.7	36.54	3181.3	38.74
962.	36.55	3181.7	38.72
962.3	36.55	3182.	38.73
962.7	36.55	3182.3	38.73
963.	36.55	3182.7	38.74
963.3	36.56	3183.	38.72
963.7	36.58	3183.3	38.72
964.	36.57	3183.7	38.73
964.3	36.57	3184.	38.72
964.7	36.56	3184.3	38.73
965.	36.58	3184.7	38.73
965.3	36.57	3185.	38.73
965.7	36.56	3185.3	38.72
966.	36.57	3185.7	38.73
966.3	36.57	3186.	38.75
966.7	36.56	3186.3	38.75
967.	36.57	3186.7	38.74
967.3	36.56	3187.	38.74
967.7	36.56	3187.3	38.73
968.	36.57	3187.7	38.73
968.3	36.58	3188.	38.74
968.7	36.57	3188.3	38.74
969.	36.58	3188.7	38.72
969.3	36.58	3189.	38.75
969.7	36.59	3189.3	38.74

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
970.	36.59	3189.7	38.73
970.3	36.59	3190.	38.73
970.7	36.6	3190.3	38.73
971.	36.59	3190.7	38.74
971.3	36.6	3191.	38.73
971.7	36.59	3191.3	38.72
972.	36.59	3191.7	38.74
972.3	36.6	3192.	38.74
972.7	36.61	3192.3	38.74
973.	36.61	3192.7	38.74
973.3	36.59	3193.	38.73
973.7	36.61	3193.3	38.73
974.	36.61	3193.7	38.74
974.3	36.62	3194.	38.71
974.7	36.62	3194.3	38.71
975.	36.62	3194.7	38.72
975.3	36.63	3195.	38.72
975.7	36.62	3195.3	38.71
976.	36.65	3195.7	38.71
976.3	36.63	3196.	38.7
976.7	36.63	3196.3	38.68
977.	36.65	3196.7	38.7
977.3	36.62	3197.	38.69
977.7	36.65	3197.3	38.68
978.	36.65	3197.7	38.7
978.3	36.65	3198.	38.67
978.7	36.65	3198.3	38.67
979.	36.65	3198.7	38.69
979.3	36.67	3199.	38.67
979.7	36.65	3199.3	38.67
980.	36.65	3199.7	38.67
980.3	36.65	3200.	38.67
980.7	36.65	3200.3	38.66
981.	36.67	3200.7	38.65
981.3	36.65	3201.	38.67
981.7	36.67	3201.3	38.67
982.	36.68	3201.7	38.66
982.3	36.68	3202.	38.65
982.7	36.68	3202.3	38.66
983.	36.68	3202.7	38.65
983.3	36.68	3203.	38.65
983.7	36.7	3203.3	38.65
984.	36.68	3203.7	38.65
984.3	36.71	3204.	38.65
984.7	36.71	3204.3	38.64
985.	36.71	3204.7	38.65
985.3	36.71	3205.	38.65
985.7	36.71	3205.3	38.64
986.	36.73	3205.7	38.63
986.3	36.72	3206.	38.64
986.7	36.72	3206.3	38.64
987.	36.73	3206.7	38.64
987.3	36.73	3207.	38.63
987.7	36.72	3207.3	38.65
988.	36.72	3207.7	38.65
988.3	36.72	3208.	38.63
988.7	36.72	3208.3	38.64
989.	36.7	3208.7	38.63
989.3	36.71	3209.	38.64
989.7	36.71	3209.3	38.65
990.	36.72	3209.7	38.64
990.3	36.7	3210.	38.64
990.7	36.73	3210.3	38.65
991.	36.71	3210.7	38.64
991.3	36.73	3211.	38.66
991.7	36.72	3211.3	38.65

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
992.	36.71	3211.7	38.64
992.3	36.71	3212.	38.65
992.7	36.7	3212.3	38.64
993.	36.68	3212.7	38.65
993.3	36.67	3213.	38.63
993.7	36.67	3213.3	38.64
994.	36.65	3213.7	38.66
994.3	36.65	3214.	38.63
994.7	36.67	3214.3	38.65
995.	36.68	3214.7	38.65
995.3	36.67	3215.	38.65
995.7	36.65	3215.3	38.65
996.	36.65	3215.7	38.65
996.3	36.68	3216.	38.65
996.7	36.65	3216.3	38.65
997.	36.65	3216.7	38.66
997.3	36.65	3217.	38.66
997.7	36.65	3217.3	38.66
998.	36.65	3217.7	38.67
998.3	36.65	3218.	38.66
998.7	36.65	3218.3	38.66
999.	36.65	3218.7	38.69
999.3	36.65	3219.	38.69
999.7	36.65	3219.3	38.67
1000.	36.62	3219.7	38.68
1000.3	36.63	3220.	38.68
1000.7	36.65	3220.3	38.68
1001.	36.63	3220.7	38.66
1001.3	36.61	3221.	38.67
1001.7	36.62	3221.3	38.68
1002.	36.62	3221.7	38.68
1002.3	36.62	3222.	38.69
1002.7	36.63	3222.3	38.67
1003.	36.63	3222.7	38.67
1003.3	36.63	3223.	38.69
1003.7	36.63	3223.3	38.67
1004.	36.63	3223.7	38.68
1004.3	36.62	3224.	38.69
1004.7	36.62	3224.3	38.67
1005.	36.61	3224.7	38.67
1005.3	36.62	3225.	38.67
1005.7	36.63	3225.3	38.68
1006.	36.62	3225.7	38.67
1006.3	36.61	3226.	38.67
1006.7	36.6	3226.3	38.67
1007.	36.61	3226.7	38.67
1007.3	36.6	3227.	38.67
1007.7	36.59	3227.3	38.67
1008.	36.59	3227.7	38.68
1008.3	36.59	3228.	38.64
1008.7	36.61	3228.3	38.68
1009.	36.59	3228.7	38.67
1009.3	36.6	3229.	38.66
1009.7	36.59	3229.3	38.66
1010.	36.58	3229.7	38.66
1010.3	36.6	3230.	38.67
1010.7	36.6	3230.3	38.65
1011.	36.6	3230.7	38.67
1011.3	36.6	3231.	38.63
1011.7	36.61	3231.3	38.66
1012.	36.6	3231.7	38.63
1012.3	36.61	3232.	38.64
1012.7	36.59	3232.3	38.63
1013.	36.6	3232.7	38.63
1013.3	36.61	3233.	38.62
1013.7	36.61	3233.3	38.62

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1014.	36.61	3233.7	38.62
1014.3	36.6	3234.	38.61
1014.7	36.58	3234.3	38.6
1015.	36.58	3234.7	38.61
1015.3	36.59	3235.	38.6
1015.7	36.58	3235.3	38.61
1016.	36.58	3235.7	38.6
1016.3	36.58	3236.	38.6
1016.7	36.59	3236.3	38.57
1017.	36.59	3236.7	38.57
1017.3	36.6	3237.	38.6
1017.7	36.59	3237.3	38.56
1018.	36.59	3237.7	38.56
1018.3	36.61	3238.	38.56
1018.7	36.62	3238.3	38.56
1019.	36.62	3238.7	38.56
1019.3	36.61	3239.	38.56
1019.7	36.61	3239.3	38.57
1020.	36.6	3239.7	38.56
1020.3	36.62	3240.	38.56
1020.7	36.61	3240.3	38.56
1021.	36.61	3240.7	38.56
1021.3	36.59	3241.	38.56
1021.7	36.59	3241.3	38.56
1022.	36.6	3241.7	38.57
1022.3	36.6	3242.	38.56
1022.7	36.6	3242.3	38.56
1023.	36.61	3242.7	38.56
1023.3	36.6	3243.	38.56
1023.7	36.61	3243.3	38.56
1024.	36.63	3243.7	38.54
1024.3	36.63	3244.	38.56
1024.7	36.65	3244.3	38.56
1025.	36.65	3244.7	38.54
1025.3	36.63	3245.	38.56
1025.7	36.63	3245.3	38.56
1026.	36.63	3245.7	38.56
1026.3	36.65	3246.	38.54
1026.7	36.65	3246.3	38.56
1027.	36.63	3246.7	38.56
1027.3	36.67	3247.	38.53
1027.7	36.65	3247.3	38.56
1028.	36.65	3247.7	38.54
1028.3	36.65	3248.	38.56
1028.7	36.67	3248.3	38.56
1029.	36.67	3248.7	38.54
1029.3	36.65	3249.	38.57
1029.7	36.67	3249.3	38.56
1030.	36.68	3249.7	38.56
1030.3	36.65	3250.	38.56
1030.7	36.65	3250.3	38.56
1031.	36.65	3250.7	38.56
1031.3	36.65	3251.	38.56
1031.7	36.63	3251.3	38.56
1032.	36.63	3251.7	38.56
1032.3	36.68	3252.	38.57
1032.7	36.68	3252.3	38.56
1033.	36.67	3252.7	38.57
1033.3	36.65	3253.	38.56
1033.7	36.65	3253.3	38.56
1034.	36.65	3253.7	38.57
1034.3	36.65	3254.	38.56
1034.7	36.65	3254.3	38.6
1035.	36.68	3254.7	38.56
1035.3	36.67	3255.	38.57
1035.7	36.68	3255.3	38.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1036.	36.68	3255.7	38.56
1036.3	36.68	3256.	38.56
1036.7	36.67	3256.3	38.53
1037.	36.67	3256.7	38.56
1037.3	36.68	3257.	38.56
1037.7	36.68	3257.3	38.56
1038.	36.68	3257.7	38.56
1038.3	36.68	3258.	38.56
1038.7	36.68	3258.3	38.56
1039.	36.67	3258.7	38.56
1039.3	36.67	3259.	38.53
1039.7	36.67	3259.3	38.54
1040.	36.67	3259.7	38.53
1040.3	36.68	3260.	38.53
1040.7	36.67	3260.3	38.54
1041.	36.67	3260.7	38.53
1041.3	36.67	3261.	38.52
1041.7	36.68	3261.3	38.54
1042.	36.65	3261.7	38.53
1042.3	36.65	3262.	38.52
1042.7	36.67	3262.3	38.54
1043.	36.65	3262.7	38.51
1043.3	36.68	3263.	38.53
1043.7	36.65	3263.3	38.53
1044.	36.65	3263.7	38.52
1044.3	36.65	3264.	38.53
1044.7	36.63	3264.3	38.53
1045.	36.65	3264.7	38.52
1045.3	36.65	3265.	38.53
1045.7	36.68	3265.3	38.52
1046.	36.65	3265.7	38.52
1046.3	36.65	3266.	38.54
1046.7	36.65	3266.3	38.52
1047.	36.68	3266.7	38.52
1047.3	36.68	3267.	38.52
1047.7	36.68	3267.3	38.52
1048.	36.68	3267.7	38.52
1048.3	36.68	3268.	38.51
1048.7	36.67	3268.3	38.52
1049.	36.68	3268.7	38.52
1049.3	36.7	3269.	38.53
1049.7	36.7	3269.3	38.53
1050.	36.71	3269.7	38.54
1050.3	36.71	3270.	38.52
1050.7	36.71	3270.3	38.53
1051.	36.72	3270.7	38.53
1051.3	36.74	3271.	38.52
1051.7	36.71	3271.3	38.53
1052.	36.73	3271.7	38.54
1052.3	36.73	3272.	38.54
1052.7	36.76	3272.3	38.52
1053.	36.75	3272.7	38.54
1053.3	36.76	3273.	38.52
1053.7	36.75	3273.3	38.54
1054.	36.76	3273.7	38.54
1054.3	36.74	3274.	38.54
1054.7	36.76	3274.3	38.56
1055.	36.78	3274.7	38.56
1055.3	36.78	3275.	38.56
1055.7	36.78	3275.3	38.56
1056.	36.77	3275.7	38.56
1056.3	36.76	3276.	38.53
1056.7	36.77	3276.3	38.56
1057.	36.76	3276.7	38.56
1057.3	36.78	3277.	38.54
1057.7	36.79	3277.3	38.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1058.	36.77	3277.7	38.53
1058.3	36.76	3278.	38.56
1058.7	36.78	3278.3	38.56
1059.	36.79	3278.7	38.54
1059.3	36.79	3279.	38.52
1059.7	36.78	3279.3	38.54
1060.	36.78	3279.7	38.53
1060.3	36.8	3280.	38.52
1060.7	36.81	3280.3	38.53
1061.	36.8	3280.7	38.54
1061.3	36.78	3281.	38.5
1061.7	36.8	3281.3	38.51
1062.	36.8	3281.7	38.52
1062.3	36.8	3282.	38.52
1062.7	36.81	3282.3	38.52
1063.	36.79	3282.7	38.53
1063.3	36.81	3283.	38.51
1063.7	36.81	3283.3	38.52
1064.	36.82	3283.7	38.52
1064.3	36.8	3284.	38.52
1064.7	36.82	3284.3	38.51
1065.	36.83	3284.7	38.5
1065.3	36.81	3285.	38.52
1065.7	36.83	3285.3	38.5
1066.	36.83	3285.7	38.51
1066.3	36.84	3286.	38.51
1066.7	36.83	3286.3	38.51
1067.	36.83	3286.7	38.5
1067.3	36.83	3287.	38.52
1067.7	36.84	3287.3	38.5
1068.	36.83	3287.7	38.51
1068.3	36.83	3288.	38.52
1068.7	36.83	3288.3	38.51
1069.	36.82	3288.7	38.49
1069.3	36.83	3289.	38.52
1069.7	36.81	3289.3	38.5
1070.	36.84	3289.7	38.51
1070.3	36.83	3290.	38.5
1070.7	36.83	3290.3	38.5
1071.	36.82	3290.7	38.5
1071.3	36.85	3291.	38.51
1071.7	36.82	3291.3	38.51
1072.	36.83	3291.7	38.51
1072.3	36.84	3292.	38.51
1072.7	36.83	3292.3	38.5
1073.	36.82	3292.7	38.51
1073.3	36.83	3293.	38.53
1073.7	36.83	3293.3	38.49
1074.	36.83	3293.7	38.53
1074.3	36.83	3294.	38.52
1074.7	36.82	3294.3	38.52
1075.	36.82	3294.7	38.51
1075.3	36.82	3295.	38.51
1075.7	36.83	3295.3	38.51
1076.	36.84	3295.7	38.53
1076.3	36.82	3296.	38.51
1076.7	36.81	3296.3	38.51
1077.	36.85	3296.7	38.53
1077.3	36.85	3297.	38.51
1077.7	36.82	3297.3	38.53
1078.	36.84	3297.7	38.52
1078.3	36.82	3298.	38.54
1078.7	36.82	3298.3	38.52
1079.	36.82	3298.7	38.54
1079.3	36.83	3299.	38.54
1079.7	36.82	3299.3	38.54

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1080.	36.81	3299.7	38.56
1080.3	36.82	3300.	38.53
1080.7	36.81	3300.3	38.56
1081.	36.8	3300.7	38.53
1081.3	36.81	3301.	38.56
1081.7	36.81	3301.3	38.56
1082.	36.8	3301.7	38.54
1082.3	36.81	3302.	38.56
1082.7	36.81	3302.3	38.54
1083.	36.83	3302.7	38.54
1083.3	36.83	3303.	38.56
1083.7	36.8	3303.3	38.56
1084.	36.81	3303.7	38.56
1084.3	36.83	3304.	38.54
1084.7	36.82	3304.3	38.56
1085.	36.81	3304.7	38.54
1085.3	36.82	3305.	38.56
1085.7	36.81	3305.3	38.53
1086.	36.83	3305.7	38.53
1086.3	36.84	3306.	38.54
1086.7	36.84	3306.3	38.52
1087.	36.83	3306.7	38.52
1087.3	36.83	3307.	38.54
1087.7	36.83	3307.3	38.52
1088.	36.84	3307.7	38.52
1088.3	36.82	3308.	38.54
1088.7	36.83	3308.3	38.53
1089.	36.84	3308.7	38.53
1089.3	36.82	3309.	38.53
1089.7	36.83	3309.3	38.53
1090.	36.83	3309.7	38.52
1090.3	36.83	3310.	38.53
1090.7	36.82	3310.3	38.52
1091.	36.84	3310.7	38.53
1091.3	36.83	3311.	38.52
1091.7	36.81	3311.3	38.52
1092.	36.85	3311.7	38.52
1092.3	36.83	3312.	38.51
1092.7	36.83	3312.3	38.52
1093.	36.83	3312.7	38.52
1093.3	36.85	3313.	38.5
1093.7	36.84	3313.3	38.51
1094.	36.84	3313.7	38.51
1094.3	36.85	3314.	38.51
1094.7	36.86	3314.3	38.5
1095.	36.83	3314.7	38.51
1095.3	36.85	3315.	38.51
1095.7	36.86	3315.3	38.56
1096.	36.84	3315.7	38.56
1096.3	36.85	3316.	38.56
1096.7	36.86	3316.3	38.57
1097.	36.86	3316.7	38.57
1097.3	36.85	3317.	38.57
1097.7	36.85	3317.3	38.59
1098.	36.86	3317.7	38.57
1098.3	36.84	3318.	38.56
1098.7	36.84	3318.3	38.56
1099.	36.86	3318.7	38.59
1099.3	36.83	3319.	38.56
1099.7	36.84	3319.3	38.56
1100.	36.84	3319.7	38.56
1100.3	36.84	3320.	38.57
1100.7	36.84	3320.3	38.56
1101.	36.85	3320.7	38.56
1101.3	36.84	3321.	38.56
1101.7	36.83	3321.3	38.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1102.	36.85	3321.7	38.54
1102.3	36.84	3322.	38.57
1102.7	36.84	3322.3	38.56
1103.	36.83	3322.7	38.56
1103.3	36.85	3323.	38.56
1103.7	36.84	3323.3	38.56
1104.	36.82	3323.7	38.56
1104.3	36.83	3324.	38.54
1104.7	36.84	3324.3	38.56
1105.	36.84	3324.7	38.56
1105.3	36.82	3325.	38.56
1105.7	36.83	3325.3	38.56
1106.	36.83	3325.7	38.56
1106.3	36.82	3326.	38.54
1106.7	36.83	3326.3	38.53
1107.	36.82	3326.7	38.53
1107.3	36.83	3327.	38.54
1107.7	36.8	3327.3	38.56
1108.	36.81	3327.7	38.52
1108.3	36.82	3328.	38.54
1108.7	36.81	3328.3	38.54
1109.	36.8	3328.7	38.52
1109.3	36.81	3329.	38.52
1109.7	36.82	3329.3	38.5
1110.	36.8	3329.7	38.51
1110.3	36.8	3330.	38.5
1110.7	36.81	3330.3	38.52
1111.	36.82	3330.7	38.51
1111.3	36.8	3331.	38.5
1111.7	36.81	3331.3	38.48
1112.	36.8	3331.7	38.49
1112.3	36.79	3332.	38.5
1112.7	36.81	3332.3	38.49
1113.	36.8	3332.7	38.48
1113.3	36.81	3333.	38.48
1113.7	36.81	3333.3	38.47
1114.	36.81	3333.7	38.49
1114.3	36.81	3334.	38.48
1114.7	36.82	3334.3	38.48
1115.	36.81	3334.7	38.49
1115.3	36.82	3335.	38.48
1115.7	36.83	3335.3	38.48
1116.	36.84	3335.7	38.47
1116.3	36.83	3336.	38.47
1116.7	36.84	3336.3	38.47
1117.	36.86	3336.7	38.47
1117.3	36.84	3337.	38.48
1117.7	36.86	3337.3	38.49
1118.	36.85	3337.7	38.46
1118.3	36.84	3338.	38.46
1118.7	36.87	3338.3	38.47
1119.	36.83	3338.7	38.47
1119.3	36.87	3339.	38.48
1119.7	36.85	3339.3	38.48
1120.	36.85	3339.7	38.46
1120.3	36.86	3340.	38.47
1120.7	36.85	3340.3	38.47
1121.	36.89	3340.7	51.48
1121.3	36.86	3341.	70.54
1121.7	36.88	3341.3	70.57
1122.	36.88	3341.7	70.63
1122.3	36.89	3342.	70.66
1122.7	36.88	3342.3	70.72
1123.	36.88	3342.7	70.75
1123.3	36.9	3343.	70.79
1123.7	36.88	3343.3	70.83

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1124.	36.89	3343.7	70.87
1124.3	36.89	3344.	70.92
1124.7	36.89	3344.3	70.94
1125.	36.88	3344.7	70.97
1125.3	36.89	3345.	71.05
1125.7	36.89	3345.3	70.97
1126.	36.88	3345.7	70.97
1126.3	36.9	3346.	70.97
1126.7	36.89	3346.3	71.
1127.	36.89	3346.7	71.
1127.3	36.9	3347.	70.99
1127.7	36.89	3347.3	70.98
1128.	36.9	3347.7	70.97
1128.3	36.89	3348.	70.97
1128.7	36.91	3348.3	70.97
1129.	36.89	3348.7	70.97
1129.3	36.91	3349.	70.97
1129.7	36.9	3349.3	70.98
1130.	36.91	3349.7	70.97
1130.3	36.89	3350.	70.98
1130.7	36.91	3350.3	70.97
1131.	36.91	3350.7	70.94
1131.3	36.9	3351.	70.95
1131.7	36.91	3351.3	70.94
1132.	36.9	3351.7	70.94
1132.3	36.92	3352.	70.94
1132.7	36.91	3352.3	70.94
1133.	36.93	3352.7	70.95
1133.3	36.91	3353.	70.93
1133.7	36.92	3353.3	70.93
1134.	36.91	3353.7	70.93
1134.3	36.94	3354.	70.94
1134.7	36.92	3354.3	70.95
1135.	36.93	3354.7	70.94
1135.3	36.92	3355.	70.95
1135.7	36.93	3355.3	70.95
1136.	36.93	3355.7	70.95
1136.3	36.93	3356.	70.97
1136.7	36.93	3356.3	70.97
1137.	36.94	3356.7	70.97
1137.3	36.94	3357.	70.98
1137.7	36.94	3357.3	70.87
1138.	36.94	3357.7	70.97
1138.3	36.94	3358.	70.95
1138.7	36.95	3358.3	70.93
1139.	36.95	3358.7	70.87
1139.3	36.93	3359.	70.76
1139.7	36.94	3359.3	70.59
1140.	36.94	3359.7	70.53
1140.3	36.95	3360.	60.34
1140.7	36.95	3360.3	38.14
1141.	36.96	3360.7	38.14
1141.3	36.93	3361.	38.13
1141.7	36.94	3361.3	38.13
1142.	36.95	3361.7	38.12
1142.3	36.93	3362.	38.11
1142.7	36.94	3362.3	38.13
1143.	36.94	3362.7	38.12
1143.3	36.95	3363.	38.11
1143.7	36.94	3363.3	38.12
1144.	36.94	3363.7	38.12
1144.3	36.93	3364.	38.08
1144.7	36.95	3364.3	38.09
1145.	36.93	3364.7	38.09
1145.3	36.94	3365.	38.11
1145.7	36.91	3365.3	38.11

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1146.	36.92	3365.7	38.09
1146.3	36.92	3366.	38.11
1146.7	36.91	3366.3	38.1
1147.	36.92	3366.7	38.08
1147.3	36.92	3367.	38.09
1147.7	36.92	3367.3	38.09
1148.	36.92	3367.7	38.07
1148.3	36.92	3368.	38.08
1148.7	36.91	3368.3	38.07
1149.	36.91	3368.7	38.08
1149.3	36.91	3369.	38.09
1149.7	36.92	3369.3	38.09
1150.	36.92	3369.7	38.08
1150.3	36.92	3370.	38.09
1150.7	36.92	3370.3	38.07
1151.	36.91	3370.7	38.07
1151.3	36.89	3371.	38.06
1151.7	36.92	3371.3	38.07
1152.	36.91	3371.7	38.06
1152.3	36.9	3372.	38.06
1152.7	36.9	3372.3	38.07
1153.	36.92	3372.7	38.06
1153.3	36.9	3373.	38.06
1153.7	36.9	3373.3	38.07
1154.	36.9	3373.7	38.06
1154.3	36.92	3374.	38.07
1154.7	36.91	3374.3	38.05
1155.	36.93	3374.7	38.05
1155.3	36.91	3375.	38.05
1155.7	36.91	3375.3	38.06
1156.	36.92	3375.7	38.05
1156.3	36.91	3376.	38.04
1156.7	36.92	3376.3	38.04
1157.	36.92	3376.7	38.03
1157.3	36.92	3377.	38.03
1157.7	36.94	3377.3	38.03
1158.	36.91	3377.7	38.04
1158.3	36.94	3378.	38.03
1158.7	36.93	3378.3	38.02
1159.	36.93	3378.7	38.02
1159.3	36.93	3379.	38.03
1159.7	36.94	3379.3	38.03
1160.	36.93	3379.7	38.02
1160.3	36.95	3380.	38.03
1160.7	36.92	3380.3	38.02
1161.	36.94	3380.7	38.05
1161.3	36.97	3381.	38.03
1161.7	36.94	3381.3	38.04
1162.	36.97	3381.7	38.04
1162.3	36.97	3382.	38.03
1162.7	36.93	3382.3	38.03
1163.	36.97	3382.7	38.02
1163.3	36.97	3383.	38.03
1163.7	36.95	3383.3	38.02
1164.	36.97	3383.7	38.02
1164.3	36.97	3384.	38.02
1164.7	36.95	3384.3	38.02
1165.	36.97	3384.7	38.01
1165.3	36.95	3385.	38.01
1165.7	36.97	3385.3	38.01
1166.	36.97	3385.7	38.02
1166.3	36.95	3386.	38.01
1166.7	36.95	3386.3	38.
1167.	36.97	3386.7	37.99
1167.3	36.94	3387.	38.
1167.7	36.95	3387.3	38.

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1168.	36.95	3387.7	38.
1168.3	36.97	3388.	38.
1168.7	36.95	3388.3	38.
1169.	36.96	3388.7	38.01
1169.3	36.96	3389.	38.
1169.7	36.96	3389.3	38.01
1170.	36.95	3389.7	38.
1170.3	36.97	3390.	38.
1170.7	36.95	3390.3	37.99
1171.	36.97	3390.7	38.
1171.3	36.97	3391.	38.01
1171.7	36.96	3391.3	37.98
1172.	36.97	3391.7	38.
1172.3	36.97	3392.	37.99
1172.7	36.97	3392.3	38.
1173.	36.97	3392.7	37.99
1173.3	36.97	3393.	37.98
1173.7	36.97	3393.3	37.99
1174.	36.97	3393.7	37.98
1174.3	36.96	3394.	37.98
1174.7	36.97	3394.3	37.98
1175.	36.99	3394.7	37.97
1175.3	36.97	3395.	37.97
1175.7	36.98	3395.3	37.98
1176.	36.97	3395.7	37.98
1176.3	36.98	3396.	37.97
1176.7	36.97	3396.3	37.97
1177.	36.97	3396.7	37.98
1177.3	36.97	3397.	37.99
1177.7	36.97	3397.3	37.98
1178.	36.97	3397.7	37.98
1178.3	36.97	3398.	37.99
1178.7	36.97	3398.3	37.98
1179.	36.99	3398.7	37.99
1179.3	36.98	3399.	38.
1179.7	36.99	3399.3	38.
1180.	36.99	3399.7	38.
1180.3	36.97	3400.	38.
1180.7	36.99	3400.3	38.
1181.	36.97	3400.7	38.
1181.3	36.98	3401.	38.01
1181.7	36.97	3401.3	38.
1182.	36.98	3401.7	38.
1182.3	36.97	3402.	38.
1182.7	36.97	3402.3	38.01
1183.	36.98	3402.7	38.01
1183.3	36.98	3403.	38.
1183.7	36.98	3403.3	38.03
1184.	36.98	3403.7	38.01
1184.3	36.99	3404.	38.
1184.7	36.99	3404.3	38.02
1185.	36.98	3404.7	38.
1185.3	37.	3405.	38.01
1185.7	36.98	3405.3	38.02
1186.	36.98	3405.7	38.01
1186.3	36.98	3406.	38.01
1186.7	37.	3406.3	38.
1187.	36.98	3406.7	38.01
1187.3	36.99	3407.	38.03
1187.7	36.99	3407.3	38.02
1188.	37.	3407.7	38.02
1188.3	37.01	3408.	38.01
1188.7	37.02	3408.3	38.02
1189.	37.02	3408.7	38.01
1189.3	37.01	3409.	38.03
1189.7	37.01	3409.3	38.03

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1190.	37.02	3409.7	38.02
1190.3	37.03	3410.	38.03
1190.7	37.02	3410.3	38.03
1191.	37.01	3410.7	38.03
1191.3	37.04	3411.	38.03
1191.7	37.04	3411.3	38.03
1192.	37.04	3411.7	38.05
1192.3	37.02	3412.	38.04
1192.7	37.03	3412.3	38.04
1193.	37.03	3412.7	38.05
1193.3	37.04	3413.	38.03
1193.7	37.04	3413.3	38.04
1194.	37.04	3413.7	38.04
1194.3	37.04	3414.	38.03
1194.7	37.04	3414.3	38.04
1195.	37.05	3414.7	38.02
1195.3	37.03	3415.	38.02
1195.7	37.05	3415.3	38.02
1196.	37.04	3415.7	38.03
1196.3	37.07	3416.	38.03
1196.7	37.07	3416.3	38.02
1197.	37.05	3416.7	38.05
1197.3	37.07	3417.	38.04
1197.7	37.07	3417.3	38.04
1198.	37.08	3417.7	38.03
1198.3	37.05	3418.	38.04
1198.7	37.07	3418.3	38.04
1199.	37.08	3418.7	38.03
1199.3	37.04	3419.	38.03
1199.7	37.07	3419.3	38.03
1200.	37.05	3419.7	38.03
1200.3	37.05	3420.	38.04
1200.7	37.07	3420.3	38.04
1201.	37.04	3420.7	38.05
1201.3	37.07	3421.	38.04
1201.7	37.08	3421.3	38.04
1202.	37.08	3421.7	38.05
1202.3	37.08	3422.	38.03
1202.7	37.08	3422.3	38.03
1203.	37.08	3422.7	38.04
1203.3	37.1	3423.	38.03
1203.7	37.08	3423.3	38.04
1204.	37.1	3423.7	38.03
1204.3	37.08	3424.	38.03
1204.7	37.1	3424.3	38.04
1205.	37.1	3424.7	38.04
1205.3	37.1	3425.	38.05
1205.7	37.1	3425.3	38.06
1206.	37.08	3425.7	38.06
1206.3	37.11	3426.	38.05
1206.7	37.08	3426.3	38.05
1207.	37.1	3426.7	38.06
1207.3	37.11	3427.	38.07
1207.7	37.1	3427.3	38.08
1208.	37.11	3427.7	38.07
1208.3	37.1	3428.	38.06
1208.7	37.1	3428.3	38.07
1209.	37.1	3428.7	38.07
1209.3	37.1	3429.	38.08
1209.7	37.11	3429.3	38.1
1210.	37.1	3429.7	38.08
1210.3	37.11	3430.	38.09
1210.7	37.1	3430.3	38.08
1211.	37.08	3430.7	38.07
1211.3	37.12	3431.	38.09
1211.7	37.08	3431.3	38.1

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1212.	37.08	3431.7	38.1
1212.3	37.08	3432.	38.09
1212.7	37.08	3432.3	38.07
1213.	37.1	3432.7	38.09
1213.3	37.08	3433.	38.09
1213.7	37.08	3433.3	38.09
1214.	37.08	3433.7	38.09
1214.3	37.07	3434.	38.08
1214.7	37.08	3434.3	38.1
1215.	37.08	3434.7	38.11
1215.3	37.08	3435.	38.11
1215.7	37.08	3435.3	38.1
1216.	37.08	3435.7	38.1
1216.3	37.1	3436.	38.11
1216.7	37.08	3436.3	38.13
1217.	37.08	3436.7	38.12
1217.3	37.08	3437.	38.11
1217.7	37.08	3437.3	38.11
1218.	37.1	3437.7	38.13
1218.3	37.08	3438.	38.12
1218.7	37.11	3438.3	38.11
1219.	37.08	3438.7	38.12
1219.3	37.08	3439.	38.1
1219.7	37.1	3439.3	38.11
1220.	37.07	3439.7	38.14
1220.3	37.1	3440.	38.11
1220.7	37.07	3440.3	38.13
1221.	37.08	3440.7	38.11
1221.3	37.08	3441.	38.11
1221.7	37.07	3441.3	38.12
1222.	37.08	3441.7	38.11
1222.3	37.08	3442.	38.12
1222.7	37.07	3442.3	38.12
1223.	37.08	3442.7	38.11
1223.3	37.07	3443.	38.12
1223.7	37.07	3443.3	38.12
1224.	37.07	3443.7	38.14
1224.3	37.07	3444.	38.12
1224.7	37.08	3444.3	38.12
1225.	37.07	3444.7	38.12
1225.3	37.05	3445.	38.13
1225.7	37.05	3445.3	38.16
1226.	37.07	3445.7	38.13
1226.3	37.08	3446.	38.13
1226.7	37.07	3446.3	38.11
1227.	37.07	3446.7	38.11
1227.3	37.07	3447.	38.14
1227.7	37.05	3447.3	38.12
1228.	37.08	3447.7	38.12
1228.3	37.07	3448.	38.12
1228.7	37.05	3448.3	38.13
1229.	37.05	3448.7	38.13
1229.3	37.04	3449.	38.13
1229.7	37.07	3449.3	38.14
1230.	37.08	3449.7	38.12
1230.3	37.07	3450.	38.16
1230.7	37.08	3450.3	38.14
1231.	37.08	3450.7	38.16
1231.3	37.08	3451.	38.13
1231.7	37.08	3451.3	38.13
1232.	37.08	3451.7	38.14
1232.3	37.08	3452.	38.13
1232.7	37.08	3452.3	38.13
1233.	37.08	3452.7	38.13
1233.3	37.08	3453.	38.16
1233.7	37.1	3453.3	38.16

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1234.	37.08	3453.7	38.16
1234.3	37.08	3454.	38.16
1234.7	37.11	3454.3	38.19
1235.	37.1	3454.7	38.16
1235.3	37.11	3455.	38.16
1235.7	37.08	3455.3	38.19
1236.	37.08	3455.7	38.16
1236.3	37.1	3456.	38.17
1236.7	37.1	3456.3	38.2
1237.	37.1	3456.7	38.19
1237.3	37.12	3457.	38.17
1237.7	37.11	3457.3	38.2
1238.	37.12	3457.7	38.2
1238.3	37.13	3458.	38.2
1238.7	37.11	3458.3	38.22
1239.	37.12	3458.7	38.21
1239.3	37.12	3459.	38.2
1239.7	37.11	3459.3	38.22
1240.	37.12	3459.7	38.2
1240.3	37.12	3460.	38.2
1240.7	37.12	3460.3	38.21
1241.	37.13	3460.7	38.21
1241.3	37.13	3461.	38.21
1241.7	37.12	3461.3	38.22
1242.	37.12	3461.7	38.22
1242.3	37.12	3462.	38.22
1242.7	37.11	3462.3	38.21
1243.	37.13	3462.7	38.21
1243.3	37.11	3463.	38.23
1243.7	37.12	3463.3	38.23
1244.	37.12	3463.7	38.22
1244.3	37.11	3464.	38.23
1244.7	37.13	3464.3	38.22
1245.	37.1	3464.7	38.23
1245.3	37.11	3465.	38.23
1245.7	37.1	3465.3	38.23
1246.	37.1	3465.7	38.22
1246.3	37.11	3466.	38.24
1246.7	37.1	3466.3	38.23
1247.	37.1	3466.7	38.23
1247.3	37.1	3467.	38.26
1247.7	37.1	3467.3	38.23
1248.	37.12	3467.7	38.24
1248.3	37.08	3468.	38.23
1248.7	37.08	3468.3	38.23
1249.	37.08	3468.7	38.26
1249.3	37.1	3469.	38.23
1249.7	37.1	3469.3	38.26
1250.	37.08	3469.7	38.24
1250.3	37.08	3470.	38.26
1250.7	37.08	3470.3	38.26
1251.	37.11	3470.7	38.24
1251.3	37.08	3471.	38.26
1251.7	37.1	3471.3	38.24
1252.	37.08	3471.7	38.24
1252.3	37.08	3472.	38.27
1252.7	37.08	3472.3	38.26
1253.	37.05	3472.7	38.24
1253.3	37.08	3473.	38.24
1253.7	37.08	3473.3	38.24
1254.	37.08	3473.7	38.27
1254.3	37.08	3474.	38.27
1254.7	37.08	3474.3	38.23
1255.	37.08	3474.7	38.27
1255.3	37.07	3475.	38.24
1255.7	37.07	3475.3	38.24

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1256.	37.07	3475.7	38.27
1256.3	37.04	3476.	38.23
1256.7	37.08	3476.3	38.24
1257.	37.07	3476.7	38.26
1257.3	37.07	3477.	38.26
1257.7	37.07	3477.3	38.26
1258.	37.07	3477.7	38.26
1258.3	37.08	3478.	38.27
1258.7	37.08	3478.3	38.26
1259.	37.08	3478.7	38.24
1259.3	37.07	3479.	38.27
1259.7	37.07	3479.3	38.27
1260.	37.07	3479.7	38.27
1260.3	37.03	3480.	38.27
1260.7	37.01	3480.3	38.26
1261.	37.02	3480.7	38.27
1261.3	37.	3481.	38.27
1261.7	36.99	3481.3	38.27
1262.	36.99	3481.7	38.29
1262.3	36.99	3482.	38.27
1262.7	36.98	3482.3	38.27
1263.	36.98	3482.7	38.27
1263.3	36.97	3483.	38.3
1263.7	36.99	3483.3	38.27
1264.	36.98	3483.7	38.27
1264.3	36.95	3484.	38.27
1264.7	36.95	3484.3	38.29
1265.	36.98	3484.7	38.29
1265.3	36.96	3485.	38.26
1265.7	36.94	3485.3	38.3
1266.	36.95	3485.7	38.27
1266.3	36.97	3486.	38.29
1266.7	36.96	3486.3	38.27
1267.	36.95	3486.7	38.27
1267.3	36.94	3487.	38.29
1267.7	36.94	3487.3	38.27
1268.	36.94	3487.7	38.27
1268.3	36.94	3488.	38.29
1268.7	36.95	3488.3	38.27
1269.	36.93	3488.7	38.29
1269.3	36.93	3489.	38.26
1269.7	36.94	3489.3	38.27
1270.	36.93	3489.7	38.27
1270.3	36.94	3490.	38.27
1270.7	36.93	3490.3	38.27
1271.	36.94	3490.7	38.29
1271.3	36.95	3491.	38.29
1271.7	36.94	3491.3	38.29
1272.	36.94	3491.7	38.29
1272.3	36.93	3492.	38.27
1272.7	36.93	3492.3	38.3
1273.	36.94	3492.7	38.3
1273.3	36.95	3493.	38.31
1273.7	36.97	3493.3	38.3
1274.	36.96	3493.7	38.31
1274.3	36.97	3494.	38.29
1274.7	36.98	3494.3	38.31
1275.	36.98	3494.7	38.3
1275.3	36.99	3495.	38.31
1275.7	36.99	3495.3	38.31
1276.	37.01	3495.7	38.33
1276.3	37.01	3496.	38.32
1276.7	37.02	3496.3	38.31
1277.	37.02	3496.7	38.32
1277.3	37.02	3497.	38.31
1277.7	37.03	3497.3	38.31

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1278.	37.03	3497.7	38.31
1278.3	37.04	3498.	38.32
1278.7	37.04	3498.3	38.32
1279.	37.03	3498.7	38.32
1279.3	37.04	3499.	38.32
1279.7	37.05	3499.3	38.32
1280.	37.05	3499.7	38.32
1280.3	37.05	3500.	38.34
1280.7	37.08	3500.3	38.32
1281.	37.07	3500.7	38.33
1281.3	37.08	3501.	38.32
1281.7	37.08	3501.3	38.34
1282.	37.08	3501.7	38.33
1282.3	37.1	3502.	38.34
1282.7	37.1	3502.3	38.33
1283.	37.11	3502.7	38.33
1283.3	37.11	3503.	38.34
1283.7	37.11	3503.3	38.34
1284.	37.12	3503.7	38.34
1284.3	37.11	3504.	38.32
1284.7	37.12	3504.3	38.34
1285.	37.12	3504.7	38.33
1285.3	37.13	3505.	38.33
1285.7	37.15	3505.3	38.33
1286.	37.13	3505.7	38.34
1286.3	37.14	3506.	38.34
1286.7	37.14	3506.3	38.34
1287.	37.15	3506.7	38.34
1287.3	37.14	3507.	38.34
1287.7	37.14	3507.3	38.34
1288.	37.16	3507.7	38.34
1288.3	37.15	3508.	38.35
1288.7	37.15	3508.3	38.35
1289.	37.14	3508.7	38.34
1289.3	37.15	3509.	38.36
1289.7	37.16	3509.3	38.35
1290.	37.16	3509.7	38.37
1290.3	37.17	3510.	38.33
1290.7	37.16	3510.3	38.35
1291.	37.15	3510.7	38.37
1291.3	37.16	3511.	38.34
1291.7	37.17	3511.3	38.35
1292.	37.16	3511.7	38.35
1292.3	37.17	3512.	38.36
1292.7	37.18	3512.3	38.35
1293.	37.17	3512.7	38.35
1293.3	37.19	3513.	38.36
1293.7	37.17	3513.3	38.35
1294.	37.18	3513.7	38.36
1294.3	37.19	3514.	38.36
1294.7	37.18	3514.3	38.36
1295.	37.18	3514.7	38.38
1295.3	37.2	3515.	38.36
1295.7	37.18	3515.3	38.36
1296.	37.19	3515.7	38.38
1296.3	37.19	3516.	38.38
1296.7	37.2	3516.3	38.38
1297.	37.18	3516.7	38.37
1297.3	37.2	3517.	38.36
1297.7	37.2	3517.3	38.39
1298.	37.19	3517.7	38.39
1298.3	37.2	3518.	38.37
1298.7	37.2	3518.3	38.38
1299.	37.19	3518.7	38.38
1299.3	37.19	3519.	38.39
1299.7	37.21	3519.3	38.38

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1300.	37.21	3519.7	38.38
1300.3	37.21	3520.	38.39
1300.7	37.21	3520.3	38.39
1301.	37.22	3520.7	38.4
1301.3	37.22	3521.	38.4
1301.7	37.22	3521.3	38.39
1302.	37.23	3521.7	38.39
1302.3	37.21	3522.	38.39
1302.7	37.22	3522.3	38.39
1303.	37.21	3522.7	38.39
1303.3	37.23	3523.	38.39
1303.7	37.22	3523.3	38.4
1304.	37.23	3523.7	38.38
1304.3	37.23	3524.	38.39
1304.7	37.23	3524.3	38.39
1305.	37.23	3524.7	38.39
1305.3	37.24	3525.	38.41
1305.7	37.22	3525.3	38.4
1306.	37.23	3525.7	38.41
1306.3	37.24	3526.	38.4
1306.7	37.23	3526.3	38.38
1307.	37.23	3526.7	38.4
1307.3	37.23	3527.	38.39
1307.7	37.22	3527.3	38.4
1308.	37.22	3527.7	38.4
1308.3	37.24	3528.	38.4
1308.7	37.25	3528.3	38.42
1309.	37.23	3528.7	38.4
1309.3	37.22	3529.	38.4
1309.7	37.24	3529.3	38.39
1310.	37.24	3529.7	38.39
1310.3	37.22	3530.	38.41
1310.7	37.24	3530.3	38.4
1311.	37.24	3530.7	38.42
1311.3	37.23	3531.	38.4
1311.7	37.22	3531.3	38.41
1312.	37.25	3531.7	38.41
1312.3	37.24	3532.	38.41
1312.7	37.23	3532.3	38.42
1313.	37.2	3532.7	38.39
1313.3	37.22	3533.	38.4
1313.7	37.19	3533.3	38.4
1314.	37.21	3533.7	38.42
1314.3	37.2	3534.	38.41
1314.7	37.21	3534.3	38.39
1315.	37.21	3534.7	38.42
1315.3	37.18	3535.	38.41
1315.7	37.21	3535.3	38.4
1316.	37.18	3535.7	38.42
1316.3	37.2	3536.	38.41
1316.7	37.19	3536.3	38.42
1317.	37.18	3536.7	38.43
1317.3	37.2	3537.	38.41
1317.7	37.17	3537.3	38.42
1318.	37.19	3537.7	38.43
1318.3	37.19	3538.	38.41
1318.7	37.18	3538.3	38.41
1319.	37.2	3538.7	38.41
1319.3	37.22	3539.	38.4
1319.7	37.2	3539.3	38.41
1320.	37.2	3539.7	38.4
1320.3	37.21	3540.	38.42
1320.7	37.23	3540.3	38.42
1321.	37.22	3540.7	38.4
1321.3	37.22	3541.	38.39
1321.7	37.23	3541.3	38.41

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1322.	37.24	3541.7	38.4
1322.3	37.24	3542.	38.39
1322.7	37.23	3542.3	38.4
1323.	37.24	3542.7	38.37
1323.3	37.26	3543.	38.39
1323.7	37.26	3543.3	38.4
1324.	37.26	3543.7	38.4
1324.3	37.27	3544.	38.4
1324.7	37.27	3544.3	38.4
1325.	37.28	3544.7	38.4
1325.3	37.28	3545.	38.39
1325.7	37.27	3545.3	38.41
1326.	37.28	3545.7	38.4
1326.3	37.28	3546.	38.41
1326.7	37.29	3546.3	38.41
1327.	37.27	3546.7	38.42
1327.3	37.29	3547.	38.42
1327.7	37.28	3547.3	38.41
1328.	37.26	3547.7	38.43
1328.3	37.27	3548.	38.43
1328.7	37.28	3548.3	38.41
1329.	37.28	3548.7	38.42
1329.3	37.28	3549.	38.43
1329.7	37.28	3549.3	38.43
1330.	37.3	3549.7	38.42
1330.3	37.29	3550.	38.44
1330.7	37.29	3550.3	38.44
1331.	37.29	3550.7	38.45
1331.3	37.3	3551.	38.42
1331.7	37.31	3551.3	38.43
1332.	37.3	3551.7	38.44
1332.3	37.3	3552.	38.45
1332.7	37.31	3552.3	38.44
1333.	37.33	3552.7	38.44
1333.3	37.32	3553.	38.44
1333.7	37.32	3553.3	38.45
1334.	37.32	3553.7	38.44
1334.3	37.32	3554.	38.42
1334.7	37.33	3554.3	38.44
1335.	37.33	3554.7	38.46
1335.3	37.32	3555.	38.44
1335.7	37.33	3555.3	38.45
1336.	37.35	3555.7	38.44
1336.3	37.33	3556.	38.46
1336.7	37.32	3556.3	38.47
1337.	37.33	3556.7	38.46
1337.3	37.33	3557.	38.45
1337.7	37.33	3557.3	38.44
1338.	37.34	3557.7	38.46
1338.3	37.34	3558.	38.46
1338.7	37.37	3558.3	38.46
1339.	37.35	3558.7	38.45
1339.3	37.33	3559.	38.45
1339.7	37.33	3559.3	38.47
1340.	37.37	3559.7	38.47
1340.3	37.35	3560.	38.47
1340.7	37.34	3560.3	38.47
1341.	37.34	3560.7	38.47
1341.3	37.35	3561.	38.46
1341.7	37.37	3561.3	38.47
1342.	37.34	3561.7	38.48
1342.3	37.33	3562.	38.47
1342.7	37.33	3562.3	38.46
1343.	37.35	3562.7	38.45
1343.3	37.34	3563.	38.48
1343.7	37.33	3563.3	38.47

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1344.	37.33	3563.7	38.47
1344.3	37.34	3564.	38.47
1344.7	37.34	3564.3	38.49
1345.	37.33	3564.7	38.49
1345.3	37.35	3565.	38.51
1345.7	37.34	3565.3	38.5
1346.	37.32	3565.7	38.48
1346.3	37.33	3566.	38.47
1346.7	37.34	3566.3	38.49
1347.	37.33	3566.7	38.5
1347.3	37.31	3567.	38.49
1347.7	37.33	3567.3	38.49
1348.	37.34	3567.7	38.49
1348.3	37.32	3568.	38.5
1348.7	37.32	3568.3	38.51
1349.	37.34	3568.7	38.5
1349.3	37.33	3569.	38.49
1349.7	37.3	3569.3	38.49
1350.	37.31	3569.7	38.52
1350.3	37.32	3570.	38.51
1350.7	37.3	3570.3	38.5
1351.	37.31	3570.7	38.49
1351.3	37.31	3571.	38.5
1351.7	37.3	3571.3	38.52
1352.	37.31	3571.7	38.52
1352.3	37.32	3572.	38.51
1352.7	37.29	3572.3	38.51
1353.	37.28	3572.7	38.51
1353.3	37.31	3573.	38.51
1353.7	37.3	3573.3	38.52
1354.	37.29	3573.7	38.51
1354.3	37.3	3574.	38.5
1354.7	37.3	3574.3	38.51
1355.	37.29	3574.7	38.52
1355.3	37.3	3575.	38.51
1355.7	37.3	3575.3	38.52
1356.	37.29	3575.7	38.5
1356.3	37.27	3576.	38.49
1356.7	37.29	3576.3	38.51
1357.	37.28	3576.7	38.52
1357.3	37.27	3577.	38.52
1357.7	37.28	3577.3	38.51
1358.	37.28	3577.7	38.51
1358.3	37.28	3578.	38.51
1358.7	37.28	3578.3	38.5
1359.	37.28	3578.7	38.52
1359.3	37.26	3579.	38.52
1359.7	37.27	3579.3	38.52
1360.	37.29	3579.7	38.5
1360.3	37.27	3580.	38.51
1360.7	37.28	3580.3	38.52
1361.	37.26	3580.7	38.52
1361.3	37.28	3581.	38.51
1361.7	37.28	3581.3	38.51
1362.	37.26	3581.7	38.51
1362.3	37.28	3582.	38.51
1362.7	37.28	3582.3	38.52
1363.	37.27	3582.7	38.53
1363.3	37.29	3583.	38.53
1363.7	37.28	3583.3	38.53
1364.	37.26	3583.7	38.52
1364.3	37.28	3584.	38.52
1364.7	37.27	3584.3	38.53
1365.	37.27	3584.7	38.56
1365.3	37.27	3585.	38.56
1365.7	37.27	3585.3	38.54

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1366.	37.27	3585.7	38.54
1366.3	37.29	3586.	38.54
1366.7	37.27	3586.3	38.54
1367.	37.27	3586.7	38.53
1367.3	37.29	3587.	38.56
1367.7	37.29	3587.3	38.53
1368.	37.27	3587.7	38.56
1368.3	37.28	3588.	38.54
1368.7	37.3	3588.3	38.56
1369.	37.27	3588.7	38.53
1369.3	37.26	3589.	38.56
1369.7	37.27	3589.3	38.56
1370.	37.28	3589.7	38.56
1370.3	37.26	3590.	38.56
1370.7	37.25	3590.3	38.56
1371.	37.27	3590.7	38.56
1371.3	37.25	3591.	38.54
1371.7	37.25	3591.3	38.56
1372.	37.25	3591.7	38.56
1372.3	37.27	3592.	38.57
1372.7	37.27	3592.3	38.56
1373.	37.26	3592.7	38.56
1373.3	37.26	3593.	38.56
1373.7	37.26	3593.3	38.56
1374.	37.26	3593.7	38.57
1374.3	37.26	3594.	38.57
1374.7	37.25	3594.3	38.57
1375.	37.24	3594.7	38.57
1375.3	37.26	3595.	38.56
1375.7	37.25	3595.3	38.56
1376.	37.27	3595.7	38.57
1376.3	37.27	3596.	38.56
1376.7	37.27	3596.3	38.57
1377.	37.25	3596.7	38.57
1377.3	37.26	3597.	38.59
1377.7	37.27	3597.3	38.59
1378.	37.26	3597.7	38.57
1378.3	37.28	3598.	38.57
1378.7	37.28	3598.3	38.56
1379.	37.28	3598.7	38.59
1379.3	37.28	3599.	38.6
1379.7	37.29	3599.3	38.6
1380.	37.29	3599.7	38.6
1380.3	37.29	3600.	38.59
1380.7	37.29	3600.3	38.6
1381.	37.28	3600.7	38.57
1381.3	37.3	3601.	38.59
1381.7	37.31	3601.3	38.57
1382.	37.3	3601.7	38.59
1382.3	37.3	3602.	38.59
1382.7	37.31	3602.3	38.6
1383.	37.32	3602.7	38.6
1383.3	37.31	3603.	38.6
1383.7	37.31	3603.3	38.59
1384.	37.31	3603.7	38.57
1384.3	37.31	3604.	38.57
1384.7	37.32	3604.3	38.57
1385.	37.33	3604.7	38.57
1385.3	37.32	3605.	38.56
1385.7	37.32	3605.3	38.57
1386.	37.31	3605.7	38.59
1386.3	37.31	3606.	38.6
1386.7	37.33	3606.3	38.57
1387.	37.31	3606.7	38.59
1387.3	37.31	3607.	38.56
1387.7	37.33	3607.3	38.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1388.	37.33	3607.7	38.56
1388.3	37.34	3608.	38.56
1388.7	37.34	3608.3	38.56
1389.	37.34	3608.7	38.56
1389.3	37.34	3609.	38.56
1389.7	37.32	3609.3	38.54
1390.	37.33	3609.7	38.56
1390.3	37.34	3610.	38.56
1390.7	37.35	3610.3	38.56
1391.	37.35	3610.7	38.53
1391.3	37.33	3611.	38.52
1391.7	37.35	3611.3	38.52
1392.	37.35	3611.7	38.53
1392.3	37.37	3612.	38.52
1392.7	37.39	3612.3	38.53
1393.	37.37	3612.7	38.54
1393.3	37.37	3613.	38.56
1393.7	37.37	3613.3	38.56
1394.	37.37	3613.7	38.56
1394.3	37.37	3614.	38.56
1394.7	37.37	3614.3	38.54
1395.	37.37	3614.7	38.54
1395.3	37.37	3615.	38.56
1395.7	37.37	3615.3	38.56
1396.	37.37	3615.7	38.56
1396.3	37.37	3616.	38.56
1396.7	37.37	3616.3	38.56
1397.	37.37	3616.7	38.56
1397.3	37.35	3617.	38.56
1397.7	37.37	3617.3	38.56
1398.	37.35	3617.7	38.56
1398.3	37.35	3618.	38.56
1398.7	37.39	3618.3	38.54
1399.	37.37	3618.7	38.56
1399.3	37.37	3619.	38.56
1399.7	37.37	3619.3	38.56
1400.	37.37	3619.7	38.56
1400.3	37.35	3620.	38.56
1400.7	37.35	3620.3	38.56
1401.	37.35	3620.7	38.56
1401.3	37.35	3621.	38.56
1401.7	37.37	3621.3	38.56
1402.	37.35	3621.7	38.56
1402.3	37.33	3622.	38.56
1402.7	37.33	3622.3	38.56
1403.	37.33	3622.7	38.56
1403.3	37.33	3623.	38.56
1403.7	37.32	3623.3	38.54
1404.	37.31	3623.7	38.56
1404.3	37.31	3624.	38.56
1404.7	37.31	3624.3	38.56
1405.	37.3	3624.7	38.56
1405.3	37.3	3625.	38.54
1405.7	37.3	3625.3	38.56
1406.	37.29	3625.7	38.56
1406.3	37.29	3626.	38.56
1406.7	37.3	3626.3	38.56
1407.	37.28	3626.7	38.56
1407.3	37.27	3627.	38.57
1407.7	37.29	3627.3	38.56
1408.	37.29	3627.7	38.56
1408.3	37.32	3628.	38.56
1408.7	37.33	3628.3	38.56
1409.	37.32	3628.7	38.56
1409.3	37.33	3629.	38.56
1409.7	37.33	3629.3	38.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1410.	37.31	3629.7	38.54
1410.3	37.32	3630.	38.56
1410.7	37.32	3630.3	38.56
1411.	37.29	3630.7	38.54
1411.3	37.31	3631.	38.54
1411.7	37.28	3631.3	38.56
1412.	37.29	3631.7	38.54
1412.3	37.27	3632.	38.54
1412.7	37.27	3632.3	38.56
1413.	37.29	3632.7	38.54
1413.3	37.27	3633.	38.56
1413.7	37.28	3633.3	38.56
1414.	37.26	3633.7	38.56
1414.3	37.25	3634.	38.56
1414.7	37.28	3634.3	38.54
1415.	37.24	3634.7	38.56
1415.3	37.27	3635.	38.56
1415.7	37.25	3635.3	38.54
1416.	37.25	3635.7	38.56
1416.3	37.24	3636.	38.56
1416.7	37.23	3636.3	38.56
1417.	37.25	3636.7	38.56
1417.3	37.22	3637.	38.56
1417.7	37.24	3637.3	38.56
1418.	37.21	3637.7	38.56
1418.3	37.25	3638.	38.56
1418.7	37.22	3638.3	38.54
1419.	37.24	3638.7	38.56
1419.3	37.22	3639.	38.56
1419.7	37.22	3639.3	38.56
1420.	37.21	3639.7	38.56
1420.3	37.22	3640.	38.56
1420.7	37.2	3640.3	38.56
1421.	37.2	3640.7	38.56
1421.3	37.2	3641.	38.56
1421.7	37.22	3641.3	38.54
1422.	37.22	3641.7	38.54
1422.3	37.24	3642.	38.56
1422.7	37.24	3642.3	38.56
1423.	37.25	3642.7	38.56
1423.3	37.22	3643.	38.56
1423.7	37.26	3643.3	38.56
1424.	37.25	3643.7	38.56
1424.3	37.26	3644.	38.56
1424.7	37.25	3644.3	38.56
1425.	37.25	3644.7	38.56
1425.3	37.25	3645.	38.56
1425.7	37.25	3645.3	38.56
1426.	37.24	3645.7	38.54
1426.3	37.26	3646.	38.54
1426.7	37.25	3646.3	38.54
1427.	37.25	3646.7	38.54
1427.3	37.25	3647.	38.54
1427.7	37.25	3647.3	38.56
1428.	37.26	3647.7	38.54
1428.3	37.27	3648.	38.53
1428.7	37.26	3648.3	38.54
1429.	37.27	3648.7	38.54
1429.3	37.27	3649.	38.53
1429.7	37.28	3649.3	38.54
1430.	37.27	3649.7	38.54
1430.3	37.29	3650.	38.53
1430.7	37.31	3650.3	38.52
1431.	37.31	3650.7	38.54
1431.3	37.31	3651.	38.53
1431.7	37.3	3651.3	38.53

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1432.	37.31	3651.7	38.53
1432.3	37.34	3652.	38.53
1432.7	37.32	3652.3	38.53
1433.	37.32	3652.7	38.53
1433.3	37.33	3653.	38.54
1433.7	37.35	3653.3	38.54
1434.	37.34	3653.7	38.54
1434.3	37.34	3654.	38.54
1434.7	37.33	3654.3	38.54
1435.	37.37	3654.7	38.54
1435.3	37.37	3655.	38.53
1435.7	37.35	3655.3	38.53
1436.	37.37	3655.7	38.54
1436.3	37.37	3656.	38.54
1436.7	37.37	3656.3	38.52
1437.	37.37	3656.7	38.52
1437.3	37.37	3657.	38.53
1437.7	37.37	3657.3	38.53
1438.	37.37	3657.7	38.53
1438.3	37.37	3658.	38.54
1438.7	37.37	3658.3	38.54
1439.	37.37	3658.7	38.54
1439.3	37.39	3659.	38.54
1439.7	37.39	3659.3	38.53
1440.	37.37	3659.7	38.54
1440.3	37.37	3660.	38.52
1440.7	37.39	3660.3	38.53
1441.	37.37	3660.7	38.53
1441.3	37.37	3661.	38.52
1441.7	37.35	3661.3	38.52
1442.	37.37	3661.7	38.54
1442.3	37.39	3662.	38.54
1442.7	37.37	3662.3	38.53
1443.	37.37	3662.7	38.53
1443.3	37.39	3663.	38.52
1443.7	37.39	3663.3	38.54
1444.	37.4	3663.7	38.54
1444.3	37.41	3664.	38.54
1444.7	37.37	3664.3	38.54
1445.	37.4	3664.7	38.54
1445.3	37.4	3665.	38.54
1445.7	37.4	3665.3	38.56
1446.	37.4	3665.7	38.56
1446.3	37.4	3666.	38.56
1446.7	37.4	3666.3	38.54
1447.	37.4	3666.7	38.54
1447.3	37.39	3667.	38.56
1447.7	37.4	3667.3	38.56
1448.	37.4	3667.7	38.56
1448.3	37.37	3668.	38.56
1448.7	37.4	3668.3	38.56
1449.	37.4	3668.7	38.53
1449.3	37.39	3669.	38.56
1449.7	37.37	3669.3	38.56
1450.	37.39	3669.7	38.54
1450.3	37.37	3670.	38.56
1450.7	37.37	3670.3	38.56
1451.	37.37	3670.7	38.59
1451.3	37.35	3671.	38.57
1451.7	37.37	3671.3	38.56
1452.	37.35	3671.7	38.59
1452.3	37.37	3672.	38.56
1452.7	37.34	3672.3	38.56
1453.	37.35	3672.7	38.56
1453.3	37.33	3673.	38.56
1453.7	37.33	3673.3	38.56

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1454.	37.32	3673.7	38.59
1454.3	37.31	3674.	38.6
1454.7	37.31	3674.3	38.59
1455.	37.31	3674.7	38.59
1455.3	37.3	3675.	38.59
1455.7	37.3	3675.3	38.6
1456.	37.27	3675.7	38.57
1456.3	37.3	3676.	38.57
1456.7	37.28	3676.3	38.59
1457.	37.29	3676.7	38.57
1457.3	37.27	3677.	38.6
1457.7	37.29	3677.3	38.6
1458.	37.27	3677.7	38.57
1458.3	37.25	3678.	38.57
1458.7	37.27	3678.3	38.57
1459.	37.25	3678.7	38.56
1459.3	37.26	3679.	38.57
1459.7	37.25	3679.3	38.6
1460.	37.25	3679.7	38.6
1460.3	37.25	3680.	38.6
1460.7	37.24	3680.3	38.6
1461.	37.24	3680.7	38.6
1461.3	37.24	3681.	38.57
1461.7	37.23	3681.3	38.59
1462.	37.23	3681.7	38.59
1462.3	37.22	3682.	38.61
1462.7	37.22	3682.3	38.6
1463.	37.22	3682.7	38.6
1463.3	37.21	3683.	38.59
1463.7	37.21	3683.3	38.59
1464.	37.21	3683.7	38.57
1464.3	37.2	3684.	38.59
1464.7	37.2	3684.3	38.6
1465.	37.2	3684.7	38.59
1465.3	37.18	3685.	38.6
1465.7	37.18	3685.3	38.6
1466.	37.19	3685.7	38.57
1466.3	37.18	3686.	38.59
1466.7	37.17	3686.3	38.59
1467.	37.19	3686.7	38.59
1467.3	37.18	3687.	38.59
1467.7	37.18	3687.3	38.57
1468.	37.18	3687.7	38.6
1468.3	37.17	3688.	38.59
1468.7	37.18	3688.3	38.59
1469.	37.17	3688.7	38.59
1469.3	37.19	3689.	38.61
1469.7	37.17	3689.3	38.6
1470.	37.16	3689.7	38.59
1470.3	37.17	3690.	38.56
1470.7	37.17	3690.3	38.6
1471.	37.15	3690.7	38.61
1471.3	37.17	3691.	38.61
1471.7	37.17	3691.3	38.6
1472.	37.15	3691.7	38.61
1472.3	37.15	3692.	38.61
1472.7	37.16	3692.3	38.63
1473.	37.16	3692.7	38.61
1473.3	37.15	3693.	38.6
1473.7	37.15	3693.3	38.61
1474.	37.16	3693.7	38.6
1474.3	37.16	3694.	38.61
1474.7	37.15	3694.3	38.62
1475.	37.16	3694.7	38.61
1475.3	37.16	3695.	38.62
1475.7	37.14	3695.3	38.62

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1476.	37.16	3695.7	38.6
1476.3	37.16	3696.	38.63
1476.7	37.15	3696.3	38.63
1477.	37.16	3696.7	38.62
1477.3	37.16	3697.	38.6
1477.7	37.16	3697.3	38.6
1478.	37.15	3697.7	38.62
1478.3	37.16	3698.	38.63
1478.7	37.16	3698.3	38.62
1479.	37.15	3698.7	38.61
1479.3	37.16	3699.	38.64
1479.7	37.16	3699.3	38.61
1480.	37.15	3699.7	38.63
1480.3	37.16	3700.	38.64
1480.7	37.17	3700.3	38.62
1481.	37.17	3700.7	38.62
1481.3	37.15	3701.	38.61
1481.7	37.18	3701.3	38.62
1482.	37.16	3701.7	38.64
1482.3	37.17	3702.	38.63
1482.7	37.17	3702.3	38.63
1483.	37.15	3702.7	38.62
1483.3	37.17	3703.	38.63
1483.7	37.15	3703.3	38.64
1484.	37.14	3703.7	38.63
1484.3	37.16	3704.	38.62
1484.7	37.15	3704.3	38.65
1485.	37.16	3704.7	38.65
1485.3	37.16	3705.	38.64
1485.7	37.16	3705.3	38.63
1486.	37.15	3705.7	38.62
1486.3	37.16	3706.	38.62
1486.7	37.14	3706.3	38.64
1487.	37.15	3706.7	38.63
1487.3	37.14	3707.	38.63
1487.7	37.14	3707.3	38.63
1488.	37.15	3707.7	38.64
1488.3	37.15	3708.	38.63
1488.7	37.15	3708.3	38.63
1489.	37.16	3708.7	38.64
1489.3	37.14	3709.	38.65
1489.7	37.12	3709.3	38.65
1490.	37.14	3709.7	38.64
1490.3	37.15	3710.	38.64
1490.7	37.14	3710.3	38.66
1491.	37.12	3710.7	38.65
1491.3	37.14	3711.	38.64
1491.7	37.13	3711.3	38.65
1492.	37.14	3711.7	38.66
1492.3	37.12	3712.	38.65
1492.7	37.13	3712.3	38.65
1493.	37.13	3712.7	38.66
1493.3	37.12	3713.	38.65
1493.7	37.12	3713.3	38.65
1494.	37.11	3713.7	38.64
1494.3	37.1	3714.	38.68
1494.7	37.11	3714.3	38.66
1495.	37.11	3714.7	38.64
1495.3	37.09	3715.	38.65
1495.7	37.1	3715.3	38.66
1496.	37.11	3715.7	38.66
1496.3	37.1	3716.	38.65
1496.7	37.09	3716.3	38.66
1497.	37.1	3716.7	38.65
1497.3	37.1	3717.	38.66
1497.7	37.1	3717.3	38.65

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1498.	37.1	3717.7	38.65
1498.3	37.08	3718.	38.67
1498.7	37.07	3718.3	38.64
1499.	37.07	3718.7	38.65
1499.3	37.08	3719.	38.67
1499.7	37.08	3719.3	38.66
1500.	37.04	3719.7	38.65
1500.3	37.08	3720.	38.66
1500.7	37.05	3720.3	38.66
1501.	37.08	3720.7	38.64
1501.3	37.05	3721.	38.65
1501.7	37.05	3721.3	38.67
1502.	37.07	3721.7	38.66
1502.3	37.05	3722.	38.67
1502.7	37.05	3722.3	38.67
1503.	37.04	3722.7	38.66
1503.3	37.02	3723.	38.68
1503.7	37.05	3723.3	38.67
1504.	37.08	3723.7	38.66
1504.3	37.05	3724.	38.67
1504.7	37.03	3724.3	38.68
1505.	37.04	3724.7	38.66
1505.3	37.02	3725.	38.67
1505.7	37.04	3725.3	38.69
1506.	37.03	3725.7	38.67
1506.3	37.01	3726.	38.68
1506.7	37.04	3726.3	38.68
1507.	37.03	3726.7	38.67
1507.3	37.03	3727.	38.69
1507.7	37.03	3727.3	38.68
1508.	37.03	3727.7	38.68
1508.3	37.01	3728.	38.69
1508.7	37.	3728.3	38.69
1509.	37.	3728.7	38.7
1509.3	37.01	3729.	38.7
1509.7	37.01	3729.3	38.69
1510.	37.	3729.7	38.71
1510.3	36.98	3730.	38.71
1510.7	36.98	3730.3	38.71
1511.	37.	3730.7	38.72
1511.3	36.99	3731.	38.71
1511.7	36.98	3731.3	38.72
1512.	36.97	3731.7	38.72
1512.3	36.98	3732.	38.71
1512.7	36.95	3732.3	38.71
1513.	36.97	3732.7	38.71
1513.3	36.95	3733.	38.73
1513.7	36.95	3733.3	38.72
1514.	36.95	3733.7	38.71
1514.3	36.94	3734.	38.72
1514.7	36.95	3734.3	38.72
1515.	36.94	3734.7	38.71
1515.3	36.94	3735.	38.72
1515.7	36.95	3735.3	38.71
1516.	36.94	3735.7	38.71
1516.3	36.95	3736.	38.72
1516.7	36.95	3736.3	38.72
1517.	36.94	3736.7	38.72
1517.3	36.94	3737.	38.72
1517.7	36.95	3737.3	38.73
1518.	36.94	3737.7	38.72
1518.3	36.95	3738.	38.72
1518.7	36.93	3738.3	38.74
1519.	36.92	3738.7	38.71
1519.3	36.92	3739.	38.72
1519.7	36.92	3739.3	38.72

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1520.	36.9	3739.7	38.73
1520.3	36.92	3740.	38.72
1520.7	36.93	3740.3	38.72
1521.	36.92	3740.7	38.72
1521.3	36.93	3741.	38.72
1521.7	36.91	3741.3	38.74
1522.	36.89	3741.7	38.74
1522.3	36.89	3742.	38.72
1522.7	36.9	3742.3	38.74
1523.	36.9	3742.7	38.72
1523.3	36.89	3743.	38.74
1523.7	36.89	3743.3	38.72
1524.	36.9	3743.7	38.72
1524.3	36.89	3744.	38.73
1524.7	36.87	3744.3	38.72
1525.	36.88	3744.7	38.73
1525.3	36.87	3745.	38.73
1525.7	36.86	3745.3	38.73
1526.	36.86	3745.7	38.72
1526.3	36.86	3746.	38.74
1526.7	36.84	3746.3	38.72
1527.	36.83	3746.7	38.74
1527.3	36.84	3747.	38.73
1527.7	36.83	3747.3	38.73
1528.	36.83	3747.7	38.72
1528.3	36.82	3748.	38.72
1528.7	36.8	3748.3	38.72
1529.	36.79	3748.7	38.72
1529.3	36.81	3749.	38.74
1529.7	36.79	3749.3	38.73
1530.	36.8	3749.7	38.74
1530.3	36.8	3750.	38.75
1530.7	36.79	3750.3	38.73
1531.	36.79	3750.7	38.75
1531.3	36.81	3751.	38.73
1531.7	36.79	3751.3	38.73
1532.	36.79	3751.7	38.74
1532.3	36.8	3752.	38.73
1532.7	36.78	3752.3	38.75
1533.	36.78	3752.7	38.74
1533.3	36.8	3753.	38.75
1533.7	36.78	3753.3	38.74
1534.	36.79	3753.7	38.74
1534.3	36.78	3754.	38.74
1534.7	36.77	3754.3	38.74
1535.	36.79	3754.7	38.74
1535.3	36.79	3755.	38.75
1535.7	36.78	3755.3	38.74
1536.	36.8	3755.7	38.75
1536.3	36.81	3756.	38.74
1536.7	36.8	3756.3	38.74
1537.	36.79	3756.7	38.75
1537.3	36.8	3757.	38.74
1537.7	36.81	3757.3	38.75
1538.	36.8	3757.7	38.76
1538.3	36.79	3758.	38.75
1538.7	36.81	3758.3	38.76
1539.	36.81	3758.7	38.75
1539.3	36.8	3759.	38.76
1539.7	36.8	3759.3	38.76
1540.	36.8	3759.7	38.77
1540.3	36.81	3760.	38.77
1540.7	36.79	3760.3	38.76
1541.	36.82	3760.7	38.75
1541.3	36.81	3761.	38.75
1541.7	36.8	3761.3	38.76

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1542.	36.79	3761.7	38.75
1542.3	36.81	3762.	38.76
1542.7	36.81	3762.3	38.77
1543.	36.8	3762.7	38.76
1543.3	36.8	3763.	38.76
1543.7	36.81	3763.3	38.76
1544.	36.81	3763.7	38.76
1544.3	36.82	3764.	38.76
1544.7	36.82	3764.3	38.74
1545.	36.8	3764.7	38.76
1545.3	36.81	3765.	38.76
1545.7	36.8	3765.3	38.76
1546.	36.81	3765.7	38.75
1546.3	36.83	3766.	38.77
1546.7	36.82	3766.3	38.75
1547.	36.83	3766.7	38.77
1547.3	36.83	3767.	38.77
1547.7	36.85	3767.3	38.76
1548.	36.84	3767.7	38.76
1548.3	36.85	3768.	38.77
1548.7	36.87	3768.3	38.77
1549.	36.88	3768.7	38.77
1549.3	36.89	3769.	38.77
1549.7	36.92	3769.3	38.77
1550.	36.91	3769.7	38.78
1550.3	36.9	3770.	38.76
1550.7	36.9	3770.3	38.78
1551.	36.93	3770.7	38.77
1551.3	36.94	3771.	38.75
1551.7	36.94	3771.3	38.77
1552.	36.95	3771.7	38.75
1552.3	36.97	3772.	38.77
1552.7	36.95	3772.3	38.76
1553.	36.98	3772.7	38.78
1553.3	36.99	3773.	38.77
1553.7	36.98	3773.3	38.78
1554.	36.98	3773.7	38.79
1554.3	36.99	3774.	38.79
1554.7	36.99	3774.3	38.78
1555.	37.02	3774.7	38.77
1555.3	37.02	3775.	38.79
1555.7	37.02	3775.3	38.77
1556.	37.05	3775.7	38.79
1556.3	37.02	3776.	38.77
1556.7	37.03	3776.3	38.79
1557.	37.08	3776.7	38.78
1557.3	37.07	3777.	38.79
1557.7	37.1	3777.3	38.78
1558.	37.1	3777.7	38.78
1558.3	37.09	3778.	38.79
1558.7	37.11	3778.3	38.78
1559.	37.11	3778.7	38.8
1559.3	37.1	3779.	38.78
1559.7	37.11	3779.3	38.8
1560.	37.11	3779.7	38.79
1560.3	37.11	3780.	38.79
1560.7	37.1	3780.3	38.79
1561.	37.12	3780.7	38.79
1561.3	37.12	3781.	38.8
1561.7	37.1	3781.3	38.78
1562.	37.11	3781.7	38.81
1562.3	37.12	3782.	38.78
1562.7	37.13	3782.3	38.8
1563.	37.1	3782.7	38.77
1563.3	37.11	3783.	38.8
1563.7	37.09	3783.3	38.79

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1564.	37.1	3783.7	38.8
1564.3	37.09	3784.	38.79
1564.7	37.09	3784.3	38.79
1565.	37.09	3784.7	38.8
1565.3	37.1	3785.	38.8
1565.7	37.09	3785.3	38.8
1566.	37.09	3785.7	38.79
1566.3	37.1	3786.	38.81
1566.7	37.09	3786.3	38.78
1567.	37.08	3786.7	38.8
1567.3	37.08	3787.	38.8
1567.7	37.09	3787.3	38.82
1568.	37.09	3787.7	38.8
1568.3	37.09	3788.	38.8
1568.7	37.08	3788.3	38.78
1569.	37.07	3788.7	38.79
1569.3	37.09	3789.	38.79
1569.7	37.07	3789.3	38.81
1570.	37.09	3789.7	38.8
1570.3	37.09	3790.	38.8
1570.7	37.08	3790.3	38.81
1571.	37.07	3790.7	38.81
1571.3	37.08	3791.	38.81
1571.7	37.08	3791.3	38.81
1572.	37.08	3791.7	38.8
1572.3	37.07	3792.	38.8
1572.7	37.07	3792.3	38.81
1573.	37.07	3792.7	38.79
1573.3	37.07	3793.	38.81
1573.7	37.04	3793.3	38.8
1574.	37.04	3793.7	38.81
1574.3	37.01	3794.	38.79
1574.7	37.04	3794.3	38.82
1575.	37.02	3794.7	38.81
1575.3	37.03	3795.	38.82
1575.7	37.03	3795.3	38.8
1576.	37.	3795.7	38.81
1576.3	37.02	3796.	38.8
1576.7	37.01	3796.3	38.82
1577.	37.03	3796.7	38.81
1577.3	37.	3797.	38.82
1577.7	36.99	3797.3	38.82
1578.	36.99	3797.7	38.8
1578.3	36.99	3798.	38.81
1578.7	37.	3798.3	38.81
1579.	36.97	3798.7	38.81
1579.3	36.97	3799.	38.81
1579.7	36.97	3799.3	38.82
1580.	36.97	3799.7	38.81
1580.3	36.97	3800.	38.82
1580.7	36.95	3800.3	38.81
1581.	36.97	3800.7	38.83
1581.3	36.97	3801.	38.81
1581.7	36.95	3801.3	38.84
1582.	36.97	3801.7	38.81
1582.3	36.95	3802.	38.83
1582.7	36.95	3802.3	38.81
1583.	36.95	3802.7	38.81
1583.3	36.97	3803.	38.82
1583.7	36.97	3803.3	38.83
1584.	36.97	3803.7	38.81
1584.3	36.95	3804.	38.82
1584.7	36.95	3804.3	38.81
1585.	36.97	3804.7	38.82
1585.3	36.95	3805.	38.82
1585.7	36.95	3805.3	38.81

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1586.	36.95	3805.7	38.82
1586.3	36.97	3806.	38.81
1586.7	36.97	3806.3	38.82
1587.	36.93	3806.7	38.79
1587.3	36.93	3807.	38.82
1587.7	36.94	3807.3	38.81
1588.	36.93	3807.7	38.82
1588.3	36.93	3808.	38.81
1588.7	36.94	3808.3	38.82
1589.	36.94	3808.7	38.8
1589.3	36.93	3809.	38.83
1589.7	36.91	3809.3	38.81
1590.	36.94	3809.7	38.81
1590.3	36.92	3810.	38.83
1590.7	36.93	3810.3	38.83
1591.	36.93	3810.7	38.81
1591.3	36.91	3811.	38.82
1591.7	36.92	3811.3	38.81
1592.	36.92	3811.7	38.8
1592.3	36.91	3812.	38.81
1592.7	36.92	3812.3	38.81
1593.	36.93	3812.7	38.81
1593.3	36.92	3813.	38.82
1593.7	36.91	3813.3	38.82
1594.	36.9	3813.7	38.82
1594.3	36.92	3814.	38.83
1594.7	36.91	3814.3	38.81
1595.	36.91	3814.7	38.83
1595.3	36.91	3815.	38.81
1595.7	36.93	3815.3	38.83
1596.	36.94	3815.7	38.8
1596.3	36.92	3816.	38.82
1596.7	36.91	3816.3	38.81
1597.	36.93	3816.7	38.81
1597.3	36.93	3817.	38.81
1597.7	36.91	3817.3	38.81
1598.	36.92	3817.7	38.82
1598.3	36.94	3818.	38.82
1598.7	36.93	3818.3	38.81
1599.	36.93	3818.7	38.8
1599.3	36.93	3819.	38.81
1599.7	36.93	3819.3	38.81
1600.	36.94	3819.7	38.83
1600.3	36.93	3820.	38.81
1600.7	36.94	3820.3	38.83
1601.	36.94	3820.7	38.81
1601.3	36.97	3821.	38.81
1601.7	36.94	3821.3	38.81
1602.	36.97	3821.7	38.82
1602.3	36.97	3822.	38.83
1602.7	36.97	3822.3	38.82
1603.	36.98	3822.7	38.83
1603.3	36.98	3823.	38.83
1603.7	36.98	3823.3	38.83
1604.	36.98	3823.7	38.81
1604.3	36.98	3824.	38.83
1604.7	36.99	3824.3	38.82
1605.	37.	3824.7	38.83
1605.3	36.99	3825.	38.81
1605.7	36.99	3825.3	38.84
1606.	37.	3825.7	38.81
1606.3	37.02	3826.	38.83
1606.7	37.03	3826.3	38.83
1607.	37.03	3826.7	38.84
1607.3	37.03	3827.	38.83
1607.7	37.03	3827.3	38.84

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1608.	37.04	3827.7	38.82
1608.3	37.07	3828.	38.84
1608.7	37.07	3828.3	38.81
1609.	37.07	3828.7	38.83
1609.3	37.08	3829.	38.82
1609.7	37.07	3829.3	38.84
1610.	37.08	3829.7	38.84
1610.3	37.05	3830.	38.85
1610.7	37.08	3830.3	38.83
1611.	37.09	3830.7	38.84
1611.3	37.1	3831.	38.83
1611.7	37.09	3831.3	38.86
1612.	37.07	3831.7	38.83
1612.3	37.08	3832.	38.86
1612.7	37.09	3832.3	38.83
1613.	37.08	3832.7	38.84
1613.3	37.08	3833.	38.83
1613.7	37.08	3833.3	38.86
1614.	37.09	3833.7	38.85
1614.3	37.09	3834.	38.85
1614.7	37.08	3834.3	38.85
1615.	37.08	3834.7	38.85
1615.3	37.08	3835.	38.87
1615.7	37.08	3835.3	38.84
1616.	37.07	3835.7	38.85
1616.3	37.05	3836.	38.84
1616.7	37.07	3836.3	38.87
1617.	37.08	3836.7	38.85
1617.3	37.07	3837.	38.86
1617.7	37.08	3837.3	38.84
1618.	37.08	3837.7	38.86
1618.3	37.07	3838.	38.86
1618.7	37.08	3838.3	38.85
1619.	37.09	3838.7	38.84
1619.3	37.09	3839.	38.85
1619.7	37.09	3839.3	38.87
1620.	37.1	3839.7	38.85
1620.3	37.09	3840.	38.87
1620.7	37.1	3840.3	38.86
1621.	37.09	3840.7	38.88
1621.3	37.09	3841.	38.86
1621.7	37.09	3841.3	38.87
1622.	37.09	3841.7	38.84
1622.3	37.08	3842.	38.86
1622.7	37.08	3842.3	38.86
1623.	37.08	3842.7	38.86
1623.3	37.09	3843.	38.87
1623.7	37.09	3843.3	38.86
1624.	37.08	3843.7	38.87
1624.3	37.09	3844.	38.86
1624.7	37.08	3844.3	38.86
1625.	37.08	3844.7	38.83
1625.3	37.09	3845.	38.86
1625.7	37.09	3845.3	38.85
1626.	37.1	3845.7	38.86
1626.3	37.1	3846.	38.84
1626.7	37.09	3846.3	38.86
1627.	37.09	3846.7	38.85
1627.3	37.1	3847.	38.86
1627.7	37.08	3847.3	38.86
1628.	37.1	3847.7	38.86
1628.3	37.1	3848.	38.86
1628.7	37.1	3848.3	38.87
1629.	37.08	3848.7	38.86
1629.3	37.08	3849.	38.88
1629.7	37.08	3849.3	38.87

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1630.	37.08	3849.7	38.89
1630.3	37.08	3850.	38.88
1630.7	37.08	3850.3	38.89
1631.	37.08	3850.7	38.89
1631.3	37.08	3851.	38.89
1631.7	37.1	3851.3	38.9
1632.	37.08	3851.7	38.9
1632.3	37.1	3852.	38.91
1632.7	37.1	3852.3	38.88
1633.	37.07	3852.7	38.9
1633.3	37.08	3853.	38.9
1633.7	37.08	3853.3	38.9
1634.	37.1	3853.7	38.9
1634.3	37.08	3854.	38.89
1634.7	37.08	3854.3	38.92
1635.	37.07	3854.7	38.9
1635.3	37.1	3855.	38.91
1635.7	37.09	3855.3	38.9
1636.	37.08	3855.7	38.9
1636.3	37.08	3856.	38.93
1636.7	37.08	3856.3	38.91
1637.	37.08	3856.7	38.93
1637.3	37.08	3857.	38.92
1637.7	37.08	3857.3	38.91
1638.	37.05	3857.7	38.92
1638.3	37.08	3858.	38.91
1638.7	37.08	3858.3	38.93
1639.	37.07	3858.7	38.91
1639.3	37.07	3859.	38.94
1639.7	37.08	3859.3	38.92
1640.	37.05	3859.7	38.92
1640.3	37.07	3860.	38.92
1640.7	37.04	3860.3	38.91
1641.	37.03	3860.7	38.91
1641.3	37.01	3861.	38.9
1641.7	37.02	3861.3	38.93
1642.	37.01	3861.7	38.91
1642.3	37.	3862.	38.92
1642.7	37.01	3862.3	38.91
1643.	36.99	3862.7	38.9
1643.3	36.97	3863.	38.9
1643.7	36.98	3863.3	38.91
1644.	36.96	3863.7	38.89
1644.3	36.93	3864.	38.9
1644.7	36.96	3864.3	38.89
1645.	36.94	3864.7	38.91
1645.3	36.93	3865.	38.89
1645.7	36.93	3865.3	38.89
1646.	36.92	3865.7	38.9
1646.3	36.93	3866.	38.9
1646.7	36.92	3866.3	38.89
1647.	36.91	3866.7	38.89
1647.3	36.93	3867.	38.9
1647.7	36.91	3867.3	38.88
1648.	36.91	3867.7	38.9
1648.3	36.92	3868.	38.89
1648.7	36.94	3868.3	38.9
1649.	36.96	3868.7	38.89
1649.3	36.96	3869.	38.89
1649.7	36.97	3869.3	38.87
1650.	36.96	3869.7	38.89
1650.3	36.97	3870.	38.88
1650.7	36.96	3870.3	38.88
1651.	36.98	3870.7	38.89
1651.3	36.97	3871.	38.89
1651.7	36.97	3871.3	38.88

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1652.	36.99	3871.7	38.89
1652.3	36.97	3872.	38.88
1652.7	36.97	3872.3	38.87
1653.	36.98	3872.7	38.88
1653.3	36.95	3873.	38.87
1653.7	36.99	3873.3	38.88
1654.	36.97	3873.7	38.87
1654.3	36.98	3874.	38.87
1654.7	36.95	3874.3	38.86
1655.	36.97	3874.7	38.88
1655.3	36.95	3875.	38.86
1655.7	36.95	3875.3	38.88
1656.	36.96	3875.7	38.87
1656.3	36.94	3876.	38.88
1656.7	36.94	3876.3	38.87
1657.	36.95	3876.7	38.88
1657.3	36.92	3877.	38.87
1657.7	36.94	3877.3	38.88
1658.	36.92	3877.7	38.87
1658.3	36.91	3878.	38.88
1658.7	36.92	3878.3	38.87
1659.	36.92	3878.7	38.87
1659.3	36.9	3879.	38.87
1659.7	36.9	3879.3	38.87
1660.	36.89	3879.7	38.87
1660.3	36.9	3880.	38.86
1660.7	36.88	3880.3	38.87
1661.	36.87	3880.7	38.85
1661.3	36.87	3881.	38.88
1661.7	36.86	3881.3	38.86
1662.	36.86	3881.7	38.87
1662.3	36.84	3882.	38.87
1662.7	36.83	3882.3	38.88
1663.	36.84	3882.7	38.87
1663.3	36.85	3883.	38.88
1663.7	36.84	3883.3	38.88
1664.	36.82	3883.7	38.88
1664.3	36.82	3884.	38.89
1664.7	36.83	3884.3	38.87
1665.	36.83	3884.7	38.88
1665.3	36.83	3885.	38.88
1665.7	36.82	3885.3	38.87
1666.	36.82	3885.7	38.89
1666.3	36.83	3886.	38.89
1666.7	36.84	3886.3	38.89
1667.	36.83	3886.7	38.88
1667.3	36.82	3887.	38.89
1667.7	36.81	3887.3	38.88
1668.	36.83	3887.7	38.88
1668.3	36.83	3888.	38.89
1668.7	36.82	3888.3	38.88
1669.	36.82	3888.7	38.89
1669.3	36.83	3889.	38.88
1669.7	36.81	3889.3	38.87
1670.	36.81	3889.7	38.88
1670.3	36.8	3890.	38.86
1670.7	36.8	3890.3	38.88
1671.	36.8	3890.7	38.87
1671.3	36.79	3891.	38.89
1671.7	36.78	3891.3	38.89
1672.	36.78	3891.7	38.87
1672.3	36.77	3892.	38.89
1672.7	36.77	3892.3	38.88
1673.	36.75	3892.7	38.89
1673.3	36.75	3893.	38.9
1673.7	36.76	3893.3	38.89

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1674.	36.74	3893.7	38.9
1674.3	36.74	3894.	38.89
1674.7	36.72	3894.3	38.88
1675.	36.71	3894.7	38.9
1675.3	36.71	3895.	38.88
1675.7	36.71	3895.3	38.9
1676.	36.72	3895.7	38.9
1676.3	36.71	3896.	38.89
1676.7	36.68	3896.3	38.9
1677.	36.68	3896.7	38.89
1677.3	36.67	3897.	38.9
1677.7	36.68	3897.3	38.9
1678.	36.65	3897.7	38.89
1678.3	36.65	3898.	38.91
1678.7	36.67	3898.3	38.89
1679.	36.65	3898.7	38.9
1679.3	36.62	3899.	38.89
1679.7	36.62	3899.3	38.89
1680.	36.62	3899.7	38.9
1680.3	36.62	3900.	38.91
1680.7	36.6	3900.3	38.89
1681.	36.61	3900.7	38.92
1681.3	36.6	3901.	38.91
1681.7	36.6	3901.3	38.91
1682.	36.59	3901.7	38.91
1682.3	36.57	3902.	38.91
1682.7	36.58	3902.3	38.9
1683.	36.6	3902.7	38.92
1683.3	36.62	3903.	38.91
1683.7	36.62	3903.3	38.92
1684.	36.6	3903.7	38.94
1684.3	36.59	3904.	38.91
1684.7	36.59	3904.3	38.91
1685.	36.59	3904.7	38.94
1685.3	36.6	3905.	38.91
1685.7	36.61	3905.3	38.92
1686.	36.59	3905.7	38.92
1686.3	36.61	3906.	38.9
1686.7	36.6	3906.3	38.94
1687.	36.62	3906.7	38.93
1687.3	36.62	3907.	38.92
1687.7	36.62	3907.3	38.93
1688.	36.63	3907.7	38.92
1688.3	36.62	3908.	38.93
1688.7	36.62	3908.3	38.93
1689.	36.62	3908.7	38.92
1689.3	36.63	3909.	38.93
1689.7	36.62	3909.3	38.94
1690.	36.62	3909.7	38.93
1690.3	36.61	3910.	38.94
1690.7	36.62	3910.3	38.93
1691.	36.65	3910.7	38.93
1691.3	36.62	3911.	38.93
1691.7	36.62	3911.3	38.94
1692.	36.63	3911.7	38.94
1692.3	36.63	3912.	38.94
1692.7	36.65	3912.3	38.94
1693.	36.65	3912.7	38.94
1693.3	36.65	3913.	38.94
1693.7	36.67	3913.3	38.94
1694.	36.68	3913.7	38.96
1694.3	36.68	3914.	38.93
1694.7	36.67	3914.3	38.93
1695.	36.68	3914.7	38.93
1695.3	36.7	3915.	38.93
1695.7	36.71	3915.3	38.94

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1696.	36.71	3915.7	38.96
1696.3	36.73	3916.	38.93
1696.7	36.74	3916.3	38.94
1697.	36.74	3916.7	38.94
1697.3	36.74	3917.	38.94
1697.7	36.75	3917.3	38.96
1698.	36.77	3917.7	38.94
1698.3	36.78	3918.	38.96
1698.7	36.8	3918.3	38.94
1699.	36.78	3918.7	38.96
1699.3	36.81	3919.	38.94
1699.7	36.8	3919.3	38.94
1700.	36.82	3919.7	38.96
1700.3	36.82	3920.	38.96
1700.7	36.84	3920.3	38.96
1701.	36.84	3920.7	38.96
1701.3	36.84	3921.	38.96
1701.7	36.85	3921.3	38.96
1702.	36.85	3921.7	38.94
1702.3	36.87	3922.	38.96
1702.7	36.86	3922.3	38.98
1703.	36.88	3922.7	38.94
1703.3	36.88	3923.	38.94
1703.7	36.88	3923.3	38.96
1704.	36.88	3923.7	38.96
1704.3	36.9	3924.	38.94
1704.7	36.89	3924.3	38.96
1705.	36.89	3924.7	38.96
1705.3	36.88	3925.	38.96
1705.7	36.89	3925.3	38.96
1706.	36.9	3925.7	38.96
1706.3	36.9	3926.	38.96
1706.7	36.89	3926.3	38.96
1707.	36.88	3926.7	38.96
1707.3	36.89	3927.	38.96
1707.7	36.89	3927.3	38.96
1708.	36.89	3927.7	38.96
1708.3	36.89	3928.	38.96
1708.7	36.88	3928.3	38.94
1709.	36.87	3928.7	38.96
1709.3	36.89	3929.	38.94
1709.7	36.88	3929.3	38.94
1710.	36.89	3929.7	38.94
1710.3	36.88	3930.	38.96
1710.7	36.88	3930.3	38.93
1711.	36.89	3930.7	38.92
1711.3	36.87	3931.	38.94
1711.7	36.87	3931.3	38.94
1712.	36.89	3931.7	38.93
1712.3	36.87	3932.	38.96
1712.7	36.87	3932.3	38.93
1713.	36.88	3932.7	38.92
1713.3	36.86	3933.	38.94
1713.7	36.88	3933.3	38.96
1714.	36.88	3933.7	38.93
1714.3	36.86	3934.	38.94
1714.7	36.88	3934.3	38.94
1715.	36.87	3934.7	38.93
1715.3	36.87	3935.	38.93
1715.7	36.88	3935.3	38.94
1716.	36.88	3935.7	38.96
1716.3	36.87	3936.	38.93
1716.7	36.88	3936.3	38.93
1717.	36.88	3936.7	38.94
1717.3	36.87	3937.	38.94
1717.7	36.88	3937.3	38.92

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1718.	36.88	3937.7	38.92
1718.3	36.87	3938.	38.96
1718.7	36.86	3938.3	38.96
1719.	36.86	3938.7	38.93
1719.3	36.85	3939.	38.96
1719.7	36.86	3939.3	38.96
1720.	36.86	3939.7	38.94
1720.3	36.86	3940.	38.94
1720.7	36.86	3940.3	38.96
1721.	36.86	3940.7	38.96
1721.3	36.86	3941.	38.94
1721.7	36.86	3941.3	38.94
1722.	36.87	3941.7	38.96
1722.3	36.87	3942.	38.96
1722.7	36.87	3942.3	38.96
1723.	36.89	3942.7	38.94
1723.3	36.88	3943.	38.96
1723.7	36.86	3943.3	38.96
1724.	36.87	3943.7	38.96
1724.3	36.87	3944.	38.96
1724.7	36.87	3944.3	38.96
1725.	36.87	3944.7	38.96
1725.3	36.87	3945.	38.96
1725.7	36.87	3945.3	38.96
1726.	36.86	3945.7	38.96
1726.3	36.86	3946.	38.96
1726.7	36.87	3946.3	38.96
1727.	36.86	3946.7	38.96
1727.3	36.85	3947.	38.96
1727.7	36.85	3947.3	38.98
1728.	36.82	3947.7	38.96
1728.3	36.83	3948.	38.98
1728.7	36.83	3948.3	38.96
1729.	36.83	3948.7	38.98
1729.3	36.83	3949.	38.96
1729.7	36.82	3949.3	38.98
1730.	36.8	3949.7	38.96
1730.3	36.79	3950.	38.94
1730.7	36.79	3950.3	38.98
1731.	36.81	3950.7	38.98
1731.3	36.81	3951.	38.98
1731.7	36.78	3951.3	38.96
1732.	36.8	3951.7	38.96
1732.3	36.8	3952.	38.96
1732.7	36.8	3952.3	38.98
1733.	36.8	3952.7	38.96
1733.3	36.79	3953.	38.96
1733.7	36.78	3953.3	38.96
1734.	36.8	3953.7	38.98
1734.3	36.79	3954.	38.98
1734.7	36.8	3954.3	38.98
1735.	36.8	3954.7	38.96
1735.3	36.79	3955.	38.96
1735.7	36.79	3955.3	38.98
1736.	36.78	3955.7	38.98
1736.3	36.8	3956.	38.96
1736.7	36.79	3956.3	38.96
1737.	36.78	3956.7	38.96
1737.3	36.78	3957.	38.96
1737.7	36.79	3957.3	38.98
1738.	36.78	3957.7	38.98
1738.3	36.79	3958.	38.96
1738.7	36.79	3958.3	38.96
1739.	36.78	3958.7	38.98
1739.3	36.78	3959.	38.98
1739.7	36.77	3959.3	38.98

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1740.	36.76	3959.7	38.96
1740.3	36.77	3960.	38.96
1740.7	36.78	3960.3	38.96
1741.	36.79	3960.7	38.98
1741.3	36.77	3961.	38.96
1741.7	36.76	3961.3	38.96
1742.	36.77	3961.7	38.96
1742.3	36.76	3962.	38.96
1742.7	36.77	3962.3	38.98
1743.	36.77	3962.7	38.96
1743.3	36.78	3963.	38.94
1743.7	36.77	3963.3	38.96
1744.	36.77	3963.7	38.96
1744.3	36.77	3964.	38.96
1744.7	36.76	3964.3	38.96
1745.	36.76	3964.7	38.96
1745.3	36.76	3965.	38.96
1745.7	36.75	3965.3	38.98
1746.	36.74	3965.7	38.96
1746.3	36.75	3966.	38.96
1746.7	36.74	3966.3	38.96
1747.	36.72	3966.7	38.98
1747.3	36.72	3967.	38.98
1747.7	36.71	3967.3	38.96
1748.	36.72	3967.7	38.96
1748.3	36.74	3968.	38.96
1748.7	36.71	3968.3	38.99
1749.	36.71	3968.7	38.98
1749.3	36.72	3969.	38.96
1749.7	36.72	3969.3	38.96
1750.	36.71	3969.7	38.96
1750.3	36.71	3970.	38.98
1750.7	36.71	3970.3	38.96
1751.	36.71	3970.7	38.96
1751.3	36.71	3971.	38.94
1751.7	36.72	3971.3	38.96
1752.	36.72	3971.7	38.96
1752.3	36.72	3972.	38.96
1752.7	36.72	3972.3	38.94
1753.	36.71	3972.7	38.96
1753.3	36.73	3973.	38.98
1753.7	36.72	3973.3	38.96
1754.	36.72	3973.7	38.93
1754.3	36.72	3974.	38.96
1754.7	36.7	3974.3	38.96
1755.	36.71	3974.7	38.96
1755.3	36.7	3975.	38.94
1755.7	36.7	3975.3	38.94
1756.	36.72	3975.7	38.96
1756.3	36.71	3976.	38.96
1756.7	36.71	3976.3	38.96
1757.	36.73	3976.7	38.93
1757.3	36.73	3977.	38.94
1757.7	36.72	3977.3	38.96
1758.	36.73	3977.7	38.96
1758.3	36.73	3978.	38.94
1758.7	36.73	3978.3	38.94
1759.	36.73	3978.7	38.93
1759.3	36.73	3979.	38.94
1759.7	36.74	3979.3	38.96
1760.	36.72	3979.7	38.96
1760.3	36.73	3980.	38.94
1760.7	36.73	3980.3	38.94
1761.	36.75	3980.7	38.96
1761.3	36.75	3981.	38.94
1761.7	36.75	3981.3	38.96

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1762.	36.75	3981.7	38.94
1762.3	36.75	3982.	38.96
1762.7	36.76	3982.3	38.96
1763.	36.75	3982.7	38.96
1763.3	36.74	3983.	38.96
1763.7	36.74	3983.3	38.96
1764.	36.75	3983.7	38.96
1764.3	36.77	3984.	38.96
1764.7	36.75	3984.3	38.96
1765.	36.74	3984.7	38.98
1765.3	36.74	3985.	38.96
1765.7	36.74	3985.3	38.96
1766.	36.78	3985.7	38.96
1766.3	36.76	3986.	38.96
1766.7	36.75	3986.3	38.99
1767.	36.75	3986.7	38.98
1767.3	36.76	3987.	38.98
1767.7	36.75	3987.3	38.96
1768.	36.75	3987.7	38.96
1768.3	36.79	3988.	38.98
1768.7	36.79	3988.3	38.99
1769.	36.79	3988.7	38.96
1769.3	36.79	3989.	38.96
1769.7	36.79	3989.3	38.96
1770.	36.78	3989.7	38.96
1770.3	36.78	3990.	38.98
1770.7	36.78	3990.3	38.98
1771.	36.78	3990.7	38.98
1771.3	36.77	3991.	38.96
1771.7	36.76	3991.3	38.96
1772.	36.77	3991.7	38.96
1772.3	36.76	3992.	38.96
1772.7	36.78	3992.3	38.98
1773.	36.77	3992.7	38.98
1773.3	36.76	3993.	38.96
1773.7	36.75	3993.3	38.96
1774.	36.76	3993.7	38.96
1774.3	36.74	3994.	38.96
1774.7	36.75	3994.3	38.98
1775.	36.75	3994.7	38.98
1775.3	36.75	3995.	38.98
1775.7	36.75	3995.3	38.96
1776.	36.75	3995.7	38.94
1776.3	36.75	3996.	38.96
1776.7	36.74	3996.3	38.98
1777.	36.73	3996.7	38.96
1777.3	36.75	3997.	38.96
1777.7	36.74	3997.3	38.96
1778.	36.72	3997.7	38.96
1778.3	36.73	3998.	38.96
1778.7	36.73	3998.3	38.96
1779.	36.74	3998.7	38.96
1779.3	36.72	3999.	38.96
1779.7	36.73	3999.3	38.96
1780.	36.73	3999.7	38.96
1780.3	36.72	4000.	38.94
1780.7	36.73	4000.3	38.96
1781.	36.74	4000.7	38.96
1781.3	36.73	4001.	38.96
1781.7	36.72	4001.3	38.96
1782.	36.74	4001.7	38.96
1782.3	36.73	4002.	38.96
1782.7	36.73	4002.3	38.96
1783.	36.72	4002.7	38.96
1783.3	36.71	4003.	38.96
1783.7	36.71	4003.3	38.98

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1784.	36.71	4003.7	38.96
1784.3	36.7	4004.	38.96
1784.7	36.71	4004.3	38.96
1785.	36.7	4004.7	38.94
1785.3	36.68	4005.	38.96
1785.7	36.7	4005.3	38.96
1786.	36.68	4005.7	38.96
1786.3	36.7	4006.	38.96
1786.7	36.68	4006.3	38.98
1787.	36.68	4006.7	38.99
1787.3	36.68	4007.	38.96
1787.7	36.68	4007.3	38.98
1788.	36.68	4007.7	38.96
1788.3	36.68	4008.	38.96
1788.7	36.68	4008.3	38.98
1789.	36.67	4008.7	38.98
1789.3	36.67	4009.	38.99
1789.7	36.67	4009.3	38.98
1790.	36.68	4009.7	38.98
1790.3	36.68	4010.	38.96
1790.7	36.65	4010.3	38.98
1791.	36.67	4010.7	38.99
1791.3	36.65	4011.	38.98
1791.7	36.65	4011.3	38.99
1792.	36.65	4011.7	38.99
1792.3	36.67	4012.	38.99
1792.7	36.65	4012.3	38.99
1793.	36.65	4012.7	38.98
1793.3	36.65	4013.	38.96
1793.7	36.67	4013.3	38.98
1794.	36.65	4013.7	38.96
1794.3	36.62	4014.	38.99
1794.7	36.63	4014.3	38.99
1795.	36.63	4014.7	38.99
1795.3	36.65	4015.	38.99
1795.7	36.62	4015.3	38.99
1796.	36.61	4015.7	38.99
1796.3	36.63	4016.	38.99
1796.7	36.63	4016.3	38.98
1797.	36.62	4016.7	38.98
1797.3	36.61	4017.	38.98
1797.7	36.62	4017.3	38.99
1798.	36.63	4017.7	39.01
1798.3	36.61	4018.	38.99
1798.7	36.6	4018.3	39.01
1799.	36.61	4018.7	39.01
1799.3	36.62	4019.	39.01
1799.7	36.61	4019.3	38.99
1800.	36.59	4019.7	39.01
1800.3	36.6	4020.	39.03
1800.7	36.59	4020.3	39.01
1801.	36.59	4020.7	39.01
1801.3	36.59	4021.	39.02
1801.7	36.58	4021.3	39.02
1802.	36.58	4021.7	39.02
1802.3	36.58	4022.	39.03
1802.7	36.56	4022.3	39.06
1803.	36.57	4022.7	39.04
1803.3	36.59	4023.	39.03
1803.7	36.58	4023.3	39.04
1804.	36.57	4023.7	39.05
1804.3	36.57	4024.	39.04
1804.7	36.58	4024.3	39.05
1805.	36.57	4024.7	39.06
1805.3	36.56	4025.	39.05
1805.7	36.57	4025.3	39.04

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1806.	36.56	4025.7	39.05
1806.3	36.58	4026.	39.05
1806.7	36.59	4026.3	39.04
1807.	36.56	4026.7	39.05
1807.3	36.57	4027.	39.05
1807.7	36.58	4027.3	39.05
1808.	36.56	4027.7	39.04
1808.3	36.57	4028.	39.05
1808.7	36.58	4028.3	39.06
1809.	36.58	4028.7	39.05
1809.3	36.57	4029.	39.06
1809.7	36.57	4029.3	39.06
1810.	36.59	4029.7	39.06
1810.3	36.58	4030.	39.06
1810.7	36.58	4030.3	39.06
1811.	36.57	4030.7	39.06
1811.3	36.57	4031.	39.06
1811.7	36.58	4031.3	39.06
1812.	36.57	4031.7	39.06
1812.3	36.57	4032.	39.08
1812.7	36.57	4032.3	39.06
1813.	36.59	4032.7	39.06
1813.3	36.6	4033.	39.06
1813.7	36.58	4033.3	39.06
1814.	36.58	4033.7	39.08
1814.3	36.59	4034.	39.06
1814.7	36.6	4034.3	39.08
1815.	36.58	4034.7	39.08
1815.3	36.58	4035.	39.08
1815.7	36.58	4035.3	39.08
1816.	36.6	4035.7	39.09
1816.3	36.6	4036.	39.1
1816.7	36.59	4036.3	39.09
1817.	36.6	4036.7	39.09
1817.3	36.59	4037.	39.08
1817.7	36.58	4037.3	39.07
1818.	36.6	4037.7	39.08
1818.3	36.61	4038.	39.06
1818.7	36.6	4038.3	39.09
1819.	36.6	4038.7	39.08
1819.3	36.62	4039.	39.06
1819.7	36.6	4039.3	39.06
1820.	36.6	4039.7	39.09
1820.3	36.59	4040.	39.05
1820.7	36.6	4040.3	39.08
1821.	36.62	4040.7	39.07
1821.3	36.63	4041.	39.07
1821.7	36.61	4041.3	39.1
1822.	36.61	4041.7	39.09
1822.3	36.61	4042.	39.09
1822.7	36.61	4042.3	39.09
1823.	36.62	4042.7	39.1
1823.3	36.62	4043.	39.1
1823.7	36.62	4043.3	39.1
1824.	36.61	4043.7	39.09
1824.3	36.62	4044.	39.09
1824.7	36.63	4044.3	39.09
1825.	36.62	4044.7	39.09
1825.3	36.63	4045.	39.09
1825.7	36.65	4045.3	39.09
1826.	36.65	4045.7	39.08
1826.3	36.63	4046.	39.1
1826.7	36.65	4046.3	39.1
1827.	36.65	4046.7	39.09
1827.3	36.63	4047.	39.1
1827.7	36.63	4047.3	39.07

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1828.	36.65	4047.7	39.09
1828.3	36.65	4048.	39.1
1828.7	36.65	4048.3	39.1
1829.	36.63	4048.7	39.1
1829.3	36.65	4049.	39.1
1829.7	36.62	4049.3	39.1
1830.	36.63	4049.7	39.09
1830.3	36.63	4050.	39.09
1830.7	36.65	4050.3	39.1
1831.	36.67	4050.7	39.1
1831.3	36.67	4051.	39.09
1831.7	36.67	4051.3	39.08
1832.	36.65	4051.7	39.07
1832.3	36.67	4052.	39.07
1832.7	36.67	4052.3	39.1
1833.	36.68	4052.7	39.1
1833.3	36.71	4053.	39.11
1833.7	36.74	4053.3	39.09
1834.	36.73	4053.7	39.1
1834.3	36.75	4054.	39.11
1834.7	36.74	4054.3	39.11
1835.	36.73	4054.7	39.11
1835.3	36.74	4055.	39.12
1835.7	36.73	4055.3	39.12
1836.	36.74	4055.7	39.12
1836.3	36.73	4056.	39.11
1836.7	36.74	4056.3	39.13
1837.	36.73	4056.7	39.12
1837.3	36.72	4057.	39.12
1837.7	36.72	4057.3	39.1
1838.	36.72	4057.7	39.12
1838.3	36.73	4058.	39.13
1838.7	36.71	4058.3	39.12
1839.	36.71	4058.7	39.12
1839.3	36.72	4059.	39.12
1839.7	36.7	4059.3	39.12
1840.	36.7	4059.7	39.12
1840.3	36.68	4060.	39.13
1840.7	36.68	4060.3	39.14
1841.	36.71	4060.7	39.14
1841.3	36.71	4061.	39.14
1841.7	36.68	4061.3	39.13
1842.	36.7	4061.7	39.13
1842.3	36.7	4062.	39.13
1842.7	36.68	4062.3	39.13
1843.	36.7	4062.7	39.13
1843.3	36.7	4063.	39.14
1843.7	36.7	4063.3	39.12
1844.	36.7	4063.7	39.12
1844.3	36.7	4064.	39.13
1844.7	36.68	4064.3	39.14
1845.	36.71	4064.7	39.14
1845.3	36.7	4065.	39.14
1845.7	36.68	4065.3	39.14
1846.	36.7	4065.7	39.13
1846.3	36.68	4066.	39.13
1846.7	36.71	4066.3	39.14
1847.	36.68	4066.7	39.14
1847.3	36.68	4067.	39.13
1847.7	36.68	4067.3	39.14
1848.	36.68	4067.7	39.12
1848.3	36.68	4068.	39.13
1848.7	36.68	4068.3	39.13
1849.	36.67	4068.7	39.13
1849.3	36.68	4069.	39.13
1849.7	36.68	4069.3	39.14

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1850.	36.68	4069.7	39.14
1850.3	36.68	4070.	39.15
1850.7	36.67	4070.3	39.14
1851.	36.67	4070.7	39.14
1851.3	36.65	4071.	39.13
1851.7	36.67	4071.3	39.15
1852.	36.65	4071.7	39.14
1852.3	36.63	4072.	39.13
1852.7	36.65	4072.3	39.15
1853.	36.65	4072.7	39.16
1853.3	36.68	4073.	39.14
1853.7	36.68	4073.3	39.15
1854.	36.65	4073.7	39.15
1854.3	36.65	4074.	39.16
1854.7	36.65	4074.3	39.16
1855.	36.65	4074.7	39.16
1855.3	36.65	4075.	39.16
1855.7	36.63	4075.3	39.16
1856.	36.63	4075.7	39.15
1856.3	36.65	4076.	39.17
1856.7	36.63	4076.3	39.16
1857.	36.63	4076.7	39.15
1857.3	36.63	4077.	39.16
1857.7	36.65	4077.3	39.16
1858.	36.62	4077.7	39.17
1858.3	36.63	4078.	39.16
1858.7	36.65	4078.3	39.16
1859.	36.65	4078.7	39.17
1859.3	36.65	4079.	39.18
1859.7	36.63	4079.3	39.17
1860.	36.61	4079.7	39.17
1860.3	36.62	4080.	39.17
1860.7	36.63	4080.3	39.16
1861.	36.63	4080.7	39.15
1861.3	36.65	4081.	39.17
1861.7	36.63	4081.3	39.18
1862.	36.61	4081.7	39.17
1862.3	36.62	4082.	39.18
1862.7	36.61	4082.3	39.19
1863.	36.62	4082.7	39.17
1863.3	36.61	4083.	39.18
1863.7	36.62	4083.3	39.18
1864.	36.62	4083.7	39.17
1864.3	36.63	4084.	39.16
1864.7	36.63	4084.3	39.17
1865.	36.61	4084.7	39.16
1865.3	36.6	4085.	39.17
1865.7	36.62	4085.3	39.17
1866.	36.62	4085.7	39.17
1866.3	36.6	4086.	39.16
1866.7	36.59	4086.3	39.15
1867.	36.61	4086.7	39.16
1867.3	36.61	4087.	39.15
1867.7	36.6	4087.3	39.16
1868.	36.59	4087.7	39.17
1868.3	36.61	4088.	39.16
1868.7	36.6	4088.3	39.15
1869.	36.61	4088.7	39.16
1869.3	36.6	4089.	39.16
1869.7	36.62	4089.3	39.15
1870.	36.6	4089.7	39.15
1870.3	36.6	4090.	39.16
1870.7	36.6	4090.3	39.17
1871.	36.58	4090.7	39.17
1871.3	36.6	4091.	39.17
1871.7	36.6	4091.3	39.16

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1872.	36.58	4091.7	39.16
1872.3	36.59	4092.	39.15
1872.7	36.59	4092.3	39.15
1873.	36.57	4092.7	39.16
1873.3	36.58	4093.	39.16
1873.7	36.58	4093.3	39.16
1874.	36.56	4093.7	39.17
1874.3	36.58	4094.	39.17
1874.7	36.57	4094.3	39.17
1875.	36.57	4094.7	39.17
1875.3	36.57	4095.	39.17
1875.7	36.56	4095.3	39.17
1876.	36.55	4095.7	39.17
1876.3	36.59	4096.	39.17
1876.7	36.56	4096.3	39.18
1877.	36.56	4096.7	39.19
1877.3	36.57	4097.	39.17
1877.7	36.57	4097.3	39.18
1878.	36.56	4097.7	39.18
1878.3	36.57	4098.	39.17
1878.7	36.55	4098.3	39.17
1879.	36.58	4098.7	39.16
1879.3	36.56	4099.	39.18
1879.7	36.56	4099.3	39.19
1880.	36.56	4099.7	39.18
1880.3	36.57	4100.	39.19
1880.7	36.56	4100.3	39.19
1881.	36.55	4100.7	39.2
1881.3	36.55	4101.	39.2
1881.7	36.56	4101.3	39.2
1882.	36.56	4101.7	39.2
1882.3	36.59	4102.	39.2
1882.7	36.59	4102.3	39.2
1883.	36.58	4102.7	39.21
1883.3	36.6	4103.	39.2
1883.7	36.59	4103.3	39.2
1884.	36.6	4103.7	39.2
1884.3	36.6	4104.	39.22
1884.7	36.6	4104.3	39.21
1885.	36.59	4104.7	39.2
1885.3	36.6	4105.	39.2
1885.7	36.59	4105.3	39.21
1886.	36.62	4105.7	39.2
1886.3	36.61	4106.	39.2
1886.7	36.6	4106.3	39.21
1887.	36.6	4106.7	39.21
1887.3	36.61	4107.	39.21
1887.7	36.62	4107.3	39.2
1888.	36.62	4107.7	39.22
1888.3	36.61	4108.	39.21
1888.7	36.63	4108.3	39.22
1889.	36.63	4108.7	39.22
1889.3	36.63	4109.	39.22
1889.7	36.65	4109.3	39.22
1890.	36.61	4109.7	39.22
1890.3	36.65	4110.	39.22
1890.7	36.65	4110.3	39.21
1891.	36.63	4110.7	39.22
1891.3	36.65	4111.	39.21
1891.7	36.63	4111.3	39.19
1892.	36.65	4111.7	39.19
1892.3	36.65	4112.	39.19
1892.7	36.65	4112.3	39.19
1893.	36.68	4112.7	39.17
1893.3	36.73	4113.	39.15
1893.7	36.75	4113.3	39.16

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1894.	36.74	4113.7	39.15
1894.3	36.72	4114.	39.13
1894.7	36.72	4114.3	39.13
1895.	36.73	4114.7	39.12
1895.3	36.73	4115.	39.1
1895.7	36.74	4115.3	39.1
1896.	36.74	4115.7	39.12
1896.3	36.73	4116.	39.1
1896.7	36.72	4116.3	39.09
1897.	36.71	4116.7	39.13
1897.3	36.71	4117.	39.13
1897.7	36.72	4117.3	39.14
1898.	36.72	4117.7	39.15
1898.3	36.72	4118.	39.17
1898.7	36.72	4118.3	39.18
1899.	36.72	4118.7	39.18
1899.3	36.71	4119.	39.19
1899.7	36.71	4119.3	39.21
1900.	36.71	4119.7	39.22
1900.3	36.72	4120.	39.22
1900.7	36.7	4120.3	39.22
1901.	36.7	4120.7	39.25
1901.3	36.7	4121.	39.25
1901.7	36.72	4121.3	39.25
1902.	36.71	4121.7	39.27
1902.3	36.7	4122.	39.28
1902.7	36.71	4122.3	39.28
1903.	36.68	4122.7	39.29
1903.3	36.71	4123.	39.3
1903.7	36.72	4123.3	39.31
1904.	36.71	4123.7	39.31
1904.3	36.7	4124.	39.31
1904.7	36.7	4124.3	39.32
1905.	36.7	4124.7	39.33
1905.3	36.7	4125.	39.32
1905.7	36.71	4125.3	39.33
1906.	36.68	4125.7	39.33
1906.3	36.68	4126.	39.34
1906.7	36.7	4126.3	39.36
1907.	36.68	4126.7	39.35
1907.3	36.7	4127.	39.34
1907.7	36.68	4127.3	39.36
1908.	36.7	4127.7	39.36
1908.3	36.7	4128.	39.35
1908.7	36.68	4128.3	39.35
1909.	36.68	4128.7	39.37
1909.3	36.7	4129.	39.39
1909.7	36.68	4129.3	39.37
1910.	36.68	4129.7	39.35
1910.3	36.7	4130.	39.38
1910.7	36.68	4130.3	39.39
1911.	36.68	4130.7	39.38
1911.3	36.67	4131.	39.38
1911.7	36.68	4131.3	39.38
1912.	36.7	4131.7	39.39
1912.3	43.97	4132.	39.4
1912.7	70.45	4132.3	39.42
1913.	70.51	4132.7	39.45
1913.3	70.55	4133.	39.46
1913.7	70.6	4133.3	39.45
1914.	70.65	4133.7	39.46
1914.3	70.69	4134.	39.46
1914.7	70.73	4134.3	39.45
1915.	70.77	4134.7	39.46
1915.3	70.79	4135.	39.48
1915.7	70.83	4135.3	39.46

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1916.	70.88	4135.7	39.46
1916.3	70.93	4136.	39.45
1916.7	70.94	4136.3	39.46
1917.	70.92	4136.7	39.47
1917.3	70.93	4137.	39.45
1917.7	70.94	4137.3	39.47
1918.	70.93	4137.7	39.46
1918.3	70.93	4138.	39.47
1918.7	70.94	4138.3	39.47
1919.	70.94	4138.7	39.47
1919.3	70.92	4139.	39.47
1919.7	70.92	4139.3	39.48
1920.	70.9	4139.7	39.48
1920.3	70.92	4140.	39.46
1920.7	70.92	4140.3	39.46
1921.	70.93	4140.7	39.48
1921.3	70.93	4141.	39.5
1921.7	70.9	4141.3	39.5
1922.	70.92	4141.7	39.5
1922.3	70.93	4142.	39.5
1922.7	70.92	4142.3	39.52
1923.	70.93	4142.7	39.52
1923.3	70.92	4143.	39.53
1923.7	70.93	4143.3	39.54
1924.	70.93	4143.7	39.54
1924.3	70.93	4144.	39.55
1924.7	70.93	4144.3	39.57
1925.	70.92	4144.7	39.58
1925.3	70.92	4145.	39.55
1925.7	70.92	4145.3	39.57
1926.	70.9	4145.7	39.56
1926.3	70.93	4146.	39.58
1926.7	70.92	4146.3	39.58
1927.	70.93	4146.7	39.59
1927.3	70.93	4147.	39.59
1927.7	70.93	4147.3	39.59
1928.	70.93	4147.7	39.62
1928.3	70.93	4148.	39.61
1928.7	70.93	4148.3	39.6
1929.	70.93	4148.7	39.61
1929.3	70.93	4149.	39.59
1929.7	70.93	4149.3	39.6
1930.	70.93	4149.7	39.61
1930.3	70.94	4150.	39.61
1930.7	70.93	4150.3	39.61
1931.	70.93	4150.7	39.61
1931.3	70.94	4151.	39.61
1931.7	70.93	4151.3	39.6
1932.	70.93	4151.7	39.61
1932.3	70.94	4152.	39.61
1932.7	70.94	4152.3	39.61
1933.	70.95	4152.7	39.61
1933.3	70.93	4153.	39.6
1933.7	70.93	4153.3	39.6
1934.	70.94	4153.7	39.59
1934.3	70.94	4154.	39.61
1934.7	70.94	4154.3	39.6
1935.	70.94	4154.7	39.61
1935.3	70.94	4155.	39.61
1935.7	70.94	4155.3	39.61
1936.	70.95	4155.7	39.62
1936.3	70.93	4156.	39.6
1936.7	70.94	4156.3	39.6
1937.	70.95	4156.7	39.62
1937.3	70.94	4157.	39.64
1937.7	70.93	4157.3	39.65

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1938.	70.93	4157.7	39.65
1938.3	70.94	4158.	39.66
1938.7	70.95	4158.3	39.66
1939.	70.94	4158.7	39.66
1939.3	70.93	4159.	39.66
1939.7	70.93	4159.3	39.67
1940.	70.95	4159.7	39.69
1940.3	70.93	4160.	39.68
1940.7	70.95	4160.3	39.69
1941.	70.95	4160.7	39.71
1941.3	70.95	4161.	39.69
1941.7	70.94	4161.3	39.7
1942.	70.82	4161.7	39.7
1942.3	70.87	4162.	39.71
1942.7	70.9	4162.3	39.7
1943.	70.93	4162.7	39.72
1943.3	70.93	4163.	39.72
1943.7	70.77	4163.3	39.71
1944.	70.53	4163.7	39.72
1944.3	38.37	4164.	39.73
1944.7	38.23	4164.3	39.72
1945.	38.22	4164.7	39.73
1945.3	38.21	4165.	39.74
1945.7	38.22	4165.3	39.74
1946.	38.2	4165.7	39.74
1946.3	38.19	4166.	39.73
1946.7	38.19	4166.3	39.76
1947.	38.16	4166.7	39.75
1947.3	38.17	4167.	39.74
1947.7	38.18	4167.3	39.76
1948.	38.19	4167.7	39.76
1948.3	38.18	4168.	39.75
1948.7	38.16	4168.3	39.76
1949.	38.17	4168.7	39.77
1949.3	38.17	4169.	39.76
1949.7	38.19	4169.3	39.76
1950.	38.16	4169.7	39.78
1950.3	38.19	4170.	39.76
1950.7	38.23	4170.3	39.78
1951.	38.24	4170.7	39.78
1951.3	38.23	4171.	39.77
1951.7	38.23	4171.3	39.78
1952.	38.23	4171.7	39.78
1952.3	38.22	4172.	39.79
1952.7	38.21	4172.3	39.82
1953.	38.23	4172.7	39.79
1953.3	38.22	4173.	39.79
1953.7	38.23	4173.3	39.78
1954.	38.21	4173.7	39.8
1954.3	38.21	4174.	39.79
1954.7	38.23	4174.3	39.82
1955.	38.22	4174.7	39.8
1955.3	38.2	4175.	39.8
1955.7	38.2	4175.3	39.8
1956.	38.2	4175.7	39.79
1956.3	38.21	4176.	39.82
1956.7	38.22	4176.3	39.82
1957.	38.22	4176.7	39.8
1957.3	38.22	4177.	39.82
1957.7	38.23	4177.3	39.8
1958.	38.23	4177.7	39.8
1958.3	38.23	4178.	39.82
1958.7	38.23	4178.3	39.82
1959.	38.23	4178.7	39.82
1959.3	38.23	4179.	39.84
1959.7	38.22	4179.3	39.84

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1960.	38.22	4179.7	39.82
1960.3	38.22	4180.	39.84
1960.7	38.22	4180.3	39.82
1961.	38.2	4180.7	39.84
1961.3	38.23	4181.	39.85
1961.7	38.22	4181.3	39.82
1962.	38.22	4181.7	39.84
1962.3	38.22	4182.	39.84
1962.7	38.23	4182.3	39.84
1963.	38.23	4182.7	39.84
1963.3	38.23	4183.	39.82
1963.7	38.23	4183.3	39.84
1964.	38.23	4183.7	39.84
1964.3	38.25	4184.	39.84
1964.7	38.23	4184.3	39.82
1965.	38.23	4184.7	39.82
1965.3	38.23	4185.	39.82
1965.7	38.24	4185.3	39.84
1966.	38.23	4185.7	39.82
1966.3	38.23	4186.	39.82
1966.7	38.27	4186.3	39.82
1967.	38.23	4186.7	39.84
1967.3	38.24	4187.	39.84
1967.7	38.25	4187.3	39.82
1968.	38.24	4187.7	39.82
1968.3	38.24	4188.	39.84
1968.7	38.23	4188.3	39.84
1969.	38.24	4188.7	39.84
1969.3	38.23	4189.	39.82
1969.7	38.23	4189.3	39.82
1970.	38.24	4189.7	39.84
1970.3	38.23	4190.	39.82
1970.7	38.24	4190.3	39.85
1971.	38.24	4190.7	39.82
1971.3	38.25	4191.	39.84
1971.7	38.24	4191.3	39.86
1972.	38.25	4191.7	39.85
1972.3	38.25	4192.	39.84
1972.7	38.25	4192.3	39.84
1973.	38.25	4192.7	39.84
1973.3	38.27	4193.	39.84
1973.7	38.27	4193.3	39.82
1974.	38.27	4193.7	39.82
1974.3	38.27	4194.	39.84
1974.7	38.27	4194.3	39.82
1975.	38.28	4194.7	39.84
1975.3	38.27	4195.	39.82
1975.7	38.27	4195.3	39.79
1976.	38.25	4195.7	39.82
1976.3	38.25	4196.	39.82
1976.7	38.27	4196.3	39.82
1977.	38.27	4196.7	39.82
1977.3	38.27	4197.	39.8
1977.7	38.27	4197.3	39.84
1978.	38.27	4197.7	39.86
1978.3	38.27	4198.	39.86
1978.7	38.27	4198.3	39.87
1979.	38.28	4198.7	39.86
1979.3	38.27	4199.	39.86
1979.7	38.27	4199.3	39.85
1980.	38.27	4199.7	39.82
1980.3	38.27	4200.	39.85
1980.7	38.28	4200.3	39.84
1981.	38.27	4200.7	39.82
1981.3	38.27	4201.	39.79
1981.7	38.28	4201.3	39.8

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1982.	38.27	4201.7	39.79
1982.3	38.28	4202.	39.78
1982.7	38.31	4202.3	39.77
1983.	38.3	4202.7	39.75
1983.3	38.31	4203.	39.75
1983.7	38.3	4203.3	39.74
1984.	38.28	4203.7	39.73
1984.3	38.3	4204.	39.73
1984.7	38.3	4204.3	39.72
1985.	38.31	4204.7	39.72
1985.3	38.32	4205.	39.71
1985.7	38.3	4205.3	39.69
1986.	38.31	4205.7	39.69
1986.3	38.31	4206.	39.7
1986.7	38.31	4206.3	39.68
1987.	38.31	4206.7	39.67
1987.3	38.31	4207.	39.67
1987.7	38.33	4207.3	39.67
1988.	38.33	4207.7	39.66
1988.3	38.32	4208.	39.63
1988.7	38.32	4208.3	39.65
1989.	38.32	4208.7	39.64
1989.3	38.31	4209.	39.64
1989.7	38.33	4209.3	39.62
1990.	38.34	4209.7	39.62
1990.3	38.33	4210.	39.63
1990.7	38.33	4210.3	39.62
1991.	38.34	4210.7	39.63
1991.3	38.33	4211.	39.61
1991.7	38.34	4211.3	39.62
1992.	38.35	4211.7	39.61
1992.3	38.34	4212.	39.6
1992.7	38.36	4212.3	39.6
1993.	38.35	4212.7	39.6
1993.3	38.35	4213.	39.61
1993.7	38.36	4213.3	39.61
1994.	38.36	4213.7	39.6
1994.3	38.35	4214.	39.59
1994.7	38.35	4214.3	39.59
1995.	38.35	4214.7	39.59
1995.3	38.36	4215.	39.6
1995.7	38.36	4215.3	39.59
1996.	38.37	4215.7	39.59
1996.3	38.36	4216.	39.6
1996.7	38.36	4216.3	39.59
1997.	38.36	4216.7	39.58
1997.3	38.33	4217.	39.58
1997.7	38.35	4217.3	39.58
1998.	38.37	4217.7	39.58
1998.3	38.36	4218.	39.58
1998.7	38.36	4218.3	39.59
1999.	38.35	4218.7	39.6
1999.3	38.36	4219.	39.59
1999.7	38.36	4219.3	39.6
2000.	38.37	4219.7	39.6
2000.3	38.37	4220.	39.59
2000.7	38.36	4220.3	39.58
2001.	38.37	4220.7	39.6
2001.3	38.36	4221.	39.6
2001.7	38.37	4221.3	39.6
2002.	38.37	4221.7	39.6
2002.3	38.36	4222.	39.59
2002.7	38.37	4222.3	39.6
2003.	38.37	4222.7	39.6
2003.3	38.38	4223.	39.63
2003.7	38.38	4223.3	39.62

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2004.	38.38	4223.7	39.64
2004.3	38.38	4224.	39.65
2004.7	38.39	4224.3	39.64
2005.	38.39	4224.7	39.67
2005.3	38.39	4225.	39.66
2005.7	38.4	4225.3	39.66
2006.	38.38	4225.7	39.67
2006.3	38.39	4226.	39.69
2006.7	38.4	4226.3	39.68
2007.	38.39	4226.7	39.69
2007.3	38.39	4227.	39.69
2007.7	38.41	4227.3	39.71
2008.	38.4	4227.7	39.71
2008.3	38.4	4228.	39.7
2008.7	38.38	4228.3	39.73
2009.	38.39	4228.7	39.7
2009.3	38.4	4229.	39.71
2009.7	38.4	4229.3	39.71
2010.	38.4	4229.7	39.7
2010.3	38.4	4230.	39.71
2010.7	38.4	4230.3	39.7
2011.	38.4	4230.7	39.72
2011.3	38.4	4231.	39.72
2011.7	38.42	4231.3	39.71
2012.	38.41	4231.7	39.71
2012.3	38.4	4232.	39.7
2012.7	38.41	4232.3	39.72
2013.	38.42	4232.7	39.71
2013.3	38.4	4233.	39.72
2013.7	38.4	4233.3	39.73
2014.	38.42	4233.7	39.71
2014.3	38.42	4234.	39.73
2014.7	38.41	4234.3	39.72
2015.	38.41	4234.7	39.73
2015.3	38.43	4235.	39.73
2015.7	38.41	4235.3	39.74
2016.	38.41	4235.7	39.73
2016.3	38.41	4236.	39.74
2016.7	38.44	4236.3	39.72
2017.	38.41	4236.7	39.76
2017.3	38.42	4237.	39.74
2017.7	38.44	4237.3	39.75
2018.	38.42	4237.7	39.75
2018.3	38.42	4238.	39.75
2018.7	38.44	4238.3	39.74
2019.	38.43	4238.7	39.73
2019.3	38.42	4239.	39.75
2019.7	38.43	4239.3	39.73
2020.	38.43	4239.7	39.74
2020.3	38.42	4240.	39.73
2020.7	38.44	4240.3	39.75
2021.	38.44	4240.7	39.73
2021.3	38.43	4241.	39.75
2021.7	38.43	4241.3	39.75
2022.	38.43	4241.7	39.75
2022.3	38.43	4242.	39.75
2022.7	38.43	4242.3	39.75
2023.	38.43	4242.7	39.76
2023.3	38.41	4243.	39.74
2023.7	38.42	4243.3	39.77
2024.	38.42	4243.7	39.76
2024.3	38.41	4244.	39.76
2024.7	38.41	4244.3	39.75
2025.	38.43	4244.7	39.76
2025.3	38.41	4245.	39.74
2025.7	38.43	4245.3	39.76

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2026.	38.44	4245.7	39.77
2026.3	38.42	4246.	39.76
2026.7	38.43	4246.3	39.75
2027.	38.44	4246.7	39.76
2027.3	38.44	4247.	39.77
2027.7	38.45	4247.3	39.76
2028.	38.45	4247.7	39.77
2028.3	38.43	4248.	39.75
2028.7	38.45	4248.3	39.77
2029.	38.46	4248.7	39.76
2029.3	38.43	4249.	39.78
2029.7	38.45	4249.3	39.75
2030.	38.45	4249.7	39.78
2030.3	38.45	4250.	39.77
2030.7	38.44	4250.3	39.78
2031.	38.45	4250.7	39.76
2031.3	38.45	4251.	39.78
2031.7	38.48	4251.3	39.77
2032.	38.46	4251.7	39.78
2032.3	38.46	4252.	39.77
2032.7	38.47	4252.3	39.78
2033.	38.44	4252.7	39.77
2033.3	38.47	4253.	39.78
2033.7	38.47	4253.3	39.77
2034.	38.47	4253.7	39.79
2034.3	38.48	4254.	39.77
2034.7	38.48	4254.3	39.79
2035.	38.48	4254.7	39.8
2035.3	38.47	4255.	39.78
2035.7	38.47	4255.3	39.76
2036.	38.48	4255.7	39.78
2036.3	38.47	4256.	39.78
2036.7	38.48	4256.3	39.77
2037.	38.47	4256.7	39.77
2037.3	38.48	4257.	39.77
2037.7	38.48	4257.3	39.77
2038.	38.47	4257.7	39.77
2038.3	38.5	4258.	39.79
2038.7	38.49	4258.3	39.77
2039.	38.49	4258.7	39.78
2039.3	38.48	4259.	39.78
2039.7	38.5	4259.3	39.78
2040.	38.49	4259.7	39.77
2040.3	38.5	4260.	39.77
2040.7	38.5	4260.3	39.77
2041.	38.5	4260.7	39.77
2041.3	38.5	4261.	39.77
2041.7	38.48	4261.3	39.76
2042.	38.5	4261.7	39.76
2042.3	38.5	4262.	39.77
2042.7	38.49	4262.3	39.76
2043.	38.5	4262.7	39.75
2043.3	38.49	4263.	39.75
2043.7	38.49	4263.3	39.76
2044.	38.48	4263.7	39.74
2044.3	38.49	4264.	39.75
2044.7	38.48	4264.3	39.75
2045.	38.48	4264.7	39.73
2045.3	38.49	4265.	39.76
2045.7	38.47	4265.3	39.74
2046.	38.48	4265.7	39.75
2046.3	38.47	4266.	39.75
2046.7	38.48	4266.3	39.74
2047.	38.46	4266.7	39.76
2047.3	38.48	4267.	39.76
2047.7	38.47	4267.3	39.75

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2048.	38.48	4267.7	39.75
2048.3	38.46	4268.	39.76
2048.7	38.49	4268.3	39.75
2049.	38.47	4268.7	39.75
2049.3	38.47	4269.	39.76
2049.7	38.47	4269.3	39.74
2050.	38.49	4269.7	39.74
2050.3	38.48	4270.	39.75
2050.7	38.48	4270.3	39.73
2051.	38.47	4270.7	39.73
2051.3	38.48	4271.	39.75
2051.7	38.49	4271.3	39.76
2052.	38.48	4271.7	39.75
2052.3	38.5	4272.	39.78
2052.7	38.5	4272.3	39.78
2053.	38.5	4272.7	39.78
2053.3	38.48	4273.	39.78
2053.7	38.5	4273.3	39.79
2054.	38.49	4273.7	39.78
2054.3	38.49	4274.	39.79
2054.7	38.49	4274.3	39.8
2055.	38.48	4274.7	39.8
2055.3	38.49	4275.	39.8
2055.7	38.5	4275.3	39.8
2056.	38.49	4275.7	39.8
2056.3	38.49	4276.	39.8
2056.7	38.49	4276.3	39.82
2057.	38.5	4276.7	39.82
2057.3	38.49	4277.	39.82
2057.7	38.49	4277.3	39.82
2058.	38.5	4277.7	39.82
2058.3	38.49	4278.	39.82
2058.7	38.49	4278.3	39.82
2059.	38.47	4278.7	39.84
2059.3	38.49	4279.	39.82
2059.7	38.47	4279.3	39.8
2060.	38.49	4279.7	39.84
2060.3	38.48	4280.	39.82
2060.7	38.47	4280.3	39.82
2061.	38.48	4280.7	39.82
2061.3	38.48	4281.	39.82
2061.7	38.46	4281.3	39.82
2062.	38.48	4281.7	39.8
2062.3	38.48	4282.	39.82
2062.7	38.48	4282.3	39.82
2063.	38.47	4282.7	39.82
2063.3	38.48	4283.	39.84
2063.7	38.5	4283.3	39.82
2064.	38.48	4283.7	39.8
2064.3	38.49	4284.	39.82
2064.7	38.49	4284.3	39.82
2065.	38.49	4284.7	39.84
2065.3	38.47	4285.	39.84
2065.7	38.49	4285.3	39.84
2066.	38.5	4285.7	39.82
2066.3	38.49	4286.	39.82
2066.7	38.48	4286.3	39.82
2067.	38.49	4286.7	39.84
2067.3	38.49	4287.	39.82
2067.7	38.48	4287.3	39.82
2068.	38.48	4287.7	39.82
2068.3	38.49	4288.	39.8
2068.7	38.48	4288.3	39.82
2069.	38.49	4288.7	39.82
2069.3	38.5	4289.	39.82
2069.7	38.5	4289.3	39.82

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2070.	38.5	4289.7	39.8
2070.3	38.49	4290.	39.82
2070.7	38.51	4290.3	39.8
2071.	38.49	4290.7	39.82
2071.3	38.49	4291.	39.82
2071.7	38.49	4291.3	39.79
2072.	38.49	4291.7	39.8
2072.3	38.51	4292.	39.8
2072.7	38.5	4292.3	39.8
2073.	38.5	4292.7	39.8
2073.3	38.49	4293.	39.79
2073.7	38.49	4293.3	39.79
2074.	38.51	4293.7	39.8
2074.3	38.5	4294.	39.79
2074.7	38.51	4294.3	39.78
2075.	38.51	4294.7	39.79
2075.3	38.5	4295.	39.8
2075.7	38.51	4295.3	39.77
2076.	38.49	4295.7	39.8
2076.3	38.51	4296.	39.8
2076.7	38.51	4296.3	39.78
2077.	38.52	4296.7	39.79
2077.3	38.51	4297.	39.79
2077.7	38.5	4297.3	39.79
2078.	38.5	4297.7	39.79
2078.3	38.52	4298.	39.78
2078.7	38.51	4298.3	39.79
2079.	38.51	4298.7	39.79
2079.3	38.52	4299.	39.77
2079.7	38.5	4299.3	39.77
2080.	38.52	4299.7	39.77
2080.3	38.52	4300.	39.78
2080.7	38.5	4300.3	39.76
2081.	38.52	4300.7	39.75
2081.3	38.51	4301.	39.78
2081.7	38.51	4301.3	39.77
2082.	38.54	4301.7	39.76
2082.3	38.51	4302.	39.75
2082.7	38.51	4302.3	39.77
2083.	38.51	4302.7	39.75
2083.3	38.51	4303.	39.77
2083.7	38.52	4303.3	39.75
2084.	38.51	4303.7	39.75
2084.3	38.5	4304.	39.76
2084.7	38.52	4304.3	39.76
2085.	38.51	4304.7	39.76
2085.3	38.51	4305.	39.76
2085.7	38.52	4305.3	39.76
2086.	38.49	4305.7	39.77
2086.3	38.5	4306.	39.76
2086.7	38.52	4306.3	39.75
2087.	38.5	4306.7	39.74
2087.3	38.5	4307.	39.75
2087.7	38.5	4307.3	39.76
2088.	38.5	4307.7	39.75
2088.3	38.51	4308.	39.73
2088.7	38.52	4308.3	39.75
2089.	38.51	4308.7	39.75
2089.3	38.53	4309.	39.76
2089.7	38.51	4309.3	39.74
2090.	38.52	4309.7	39.74
2090.3	38.52	4310.	39.74
2090.7	38.5	4310.3	39.75
2091.	38.52	4310.7	39.75
2091.3	38.52	4311.	39.73
2091.7	38.51	4311.3	39.72

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2092.	38.54	4311.7	39.73
2092.3	38.53	4312.	39.74
2092.7	38.52	4312.3	39.73
2093.	38.53	4312.7	39.74
2093.3	38.53	4313.	39.73
2093.7	38.52	4313.3	39.72
2094.	38.53	4313.7	39.73
2094.3	38.52	4314.	39.74
2094.7	38.52	4314.3	39.73
2095.	38.54	4314.7	39.72
2095.3	38.53	4315.	39.72
2095.7	38.52	4315.3	39.72
2096.	38.54	4315.7	39.74
2096.3	38.52	4316.	39.73
2096.7	38.54	4316.3	39.72
2097.	38.55	4316.7	39.73
2097.3	38.54	4317.	39.73
2097.7	38.54	4317.3	39.73
2098.	38.54	4317.7	39.72
2098.3	38.54	4318.	39.72
2098.7	38.54	4318.3	39.73
2099.	38.54	4318.7	39.72
2099.3	38.55	4319.	39.73
2099.7	38.54	4319.3	39.72
2100.	38.52	4319.7	39.72
2100.3	38.55	4320.	39.72
2100.7	38.56	4320.3	39.73
2101.	38.54	4320.7	39.73
2101.3	38.53	4321.	39.73
2101.7	38.57	4321.3	39.72
2102.	38.55	4321.7	39.71
2102.3	38.54	4322.	39.7
2102.7	38.54	4322.3	39.74
2103.	38.55	4322.7	39.74
2103.3	38.54	4323.	39.72
2103.7	38.55	4323.3	39.72
2104.	38.57	4323.7	39.72
2104.3	38.56	4324.	39.71
2104.7	38.54	4324.3	39.73
2105.	38.53	4324.7	39.73
2105.3	38.54	4325.	39.74
2105.7	38.55	4325.3	39.73
2106.	38.55	4325.7	39.73
2106.3	38.56	4326.	39.73
2106.7	38.55	4326.3	39.74
2107.	38.54	4326.7	39.74
2107.3	38.55	4327.	39.74
2107.7	38.56	4327.3	39.73
2108.	38.54	4327.7	39.73
2108.3	38.54	4328.	39.72
2108.7	38.53	4328.3	39.72
2109.	38.54	4328.7	39.73
2109.3	38.53	4329.	39.73
2109.7	38.54	4329.3	39.73
2110.	38.54	4329.7	39.72
2110.3	38.55	4330.	39.73
2110.7	38.55	4330.3	39.73
2111.	38.55	4330.7	39.73
2111.3	38.57	4331.	39.72
2111.7	38.55	4331.3	39.72
2112.	38.55	4331.7	39.71
2112.3	38.54	4332.	39.7
2112.7	38.56	4332.3	39.7
2113.	38.54	4332.7	39.7
2113.3	38.54	4333.	39.7
2113.7	38.56	4333.3	39.7

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2114.	38.56	4333.7	39.69
2114.3	38.55	4334.	39.7
2114.7	38.55	4334.3	39.71
2115.	38.56	4334.7	39.7
2115.3	38.55	4335.	39.69
2115.7	38.56	4335.3	39.7
2116.	38.55	4335.7	39.69
2116.3	38.56	4336.	39.69
2116.7	38.55	4336.3	39.66
2117.	38.55	4336.7	39.67
2117.3	38.55	4337.	39.68
2117.7	38.56	4337.3	39.67
2118.	38.55	4337.7	39.67
2118.3	38.55	4338.	39.67
2118.7	38.54	4338.3	39.67
2119.	38.56	4338.7	39.67
2119.3	38.55	4339.	39.67
2119.7	38.55	4339.3	39.68
2120.	38.55	4339.7	39.68
2120.3	38.56	4340.	39.66
2120.7	38.55	4340.3	39.67
2121.	38.54	4340.7	39.66
2121.3	38.54	4341.	39.67
2121.7	38.57	4341.3	39.65
2122.	38.56	4341.7	39.67
2122.3	38.56	4342.	39.65
2122.7	38.56	4342.3	39.66
2123.	38.56	4342.7	39.65
2123.3	38.56	4343.	39.65
2123.7	38.56	4343.3	39.65
2124.	38.56	4343.7	39.65
2124.3	38.55	4344.	39.64
2124.7	38.56	4344.3	39.65
2125.	38.57	4344.7	39.63
2125.3	38.56	4345.	39.65
2125.7	38.56	4345.3	39.64
2126.	38.57	4345.7	39.66
2126.3	38.57	4346.	39.66
2126.7	38.58	4346.3	39.66
2127.	38.57	4346.7	39.64
2127.3	38.56	4347.	39.65
2127.7	38.57	4347.3	39.64
2128.	38.59	4347.7	39.63
2128.3	38.6	4348.	39.64
2128.7	38.58	4348.3	39.64
2129.	38.57	4348.7	39.65
2129.3	38.56	4349.	39.65
2129.7	38.6	4349.3	39.66
2130.	38.61	4349.7	39.64
2130.3	38.59	4350.	39.63
2130.7	38.58	4350.3	39.65
2131.	38.57	4350.7	39.64
2131.3	38.56	4351.	39.64
2131.7	38.59	4351.3	39.64
2132.	38.57	4351.7	39.65
2132.3	38.56	4352.	39.64
2132.7	38.56	4352.3	39.66
2133.	38.57	4352.7	39.66
2133.3	38.59	4353.	39.65
2133.7	38.59	4353.3	39.64
2134.	38.57	4353.7	39.64
2134.3	38.56	4354.	39.64
2134.7	38.59	4354.3	39.64
2135.	38.6	4354.7	39.64
2135.3	38.59	4355.	39.65
2135.7	38.59	4355.3	39.65

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2136.	38.57	4355.7	39.64
2136.3	38.56	4356.	39.65
2136.7	38.6	4356.3	39.66
2137.	38.6	4356.7	39.66
2137.3	38.57	4357.	39.66
2137.7	38.57	4357.3	39.66
2138.	38.56	4357.7	39.65
2138.3	38.56	4358.	39.64
2138.7	38.57	4358.3	39.65
2139.	38.57	4358.7	39.63
2139.3	38.56	4359.	39.63
2139.7	38.57	4359.3	39.64
2140.	38.57	4359.7	39.64
2140.3	38.56	4360.	39.62
2140.7	38.57	4360.3	66.36
2141.	38.56	4360.7	70.39
2141.3	38.57	4361.	70.43
2141.7	38.54	4361.3	70.48
2142.	38.56	4361.7	70.51
2142.3	38.54	4362.	70.55
2142.7	38.56	4362.3	70.61
2143.	38.56	4362.7	70.64
2143.3	38.54	4363.	70.69
2143.7	38.52	4363.3	70.73
2144.	38.54	4363.7	70.75
2144.3	38.54	4364.	70.8
2144.7	38.56	4364.3	70.84
2145.	38.54	4364.7	70.84
2145.3	38.54	4365.	70.88
2145.7	38.53	4365.3	70.86
2146.	38.54	4365.7	70.85
2146.3	38.56	4366.	70.85
2146.7	38.56	4366.3	70.86
2147.	38.54	4366.7	70.88
2147.3	38.53	4367.	70.87
2147.7	38.56	4367.3	70.86
2148.	38.54	4367.7	70.86
2148.3	38.54	4368.	70.87
2148.7	38.54	4368.3	70.87
2149.	38.53	4368.7	70.88
2149.3	38.54	4369.	70.89
2149.7	38.53	4369.3	70.88
2150.	38.56	4369.7	70.87
2150.3	38.54	4370.	70.86
2150.7	38.53	4370.3	70.86
2151.	38.53	4370.7	70.87
2151.3	38.54	4371.	70.86
2151.7	38.56	4371.3	70.87
2152.	38.56	4371.7	70.87
2152.3	38.56	4372.	70.87
2152.7	38.54	4372.3	70.89
2153.	38.54	4372.7	70.87
2153.3	38.54	4373.	70.85
2153.7	38.56	4373.3	70.84
2154.	38.56	4373.7	70.85
2154.3	38.56	4374.	70.83
2154.7	38.54	4374.3	70.84
2155.	38.53	4374.7	70.8
2155.3	38.54	4375.	70.84
2155.7	38.54	4375.3	70.83
2156.	38.56	4375.7	70.8
2156.3	38.56	4376.	70.84
2156.7	38.54	4376.3	70.71
2157.	38.54	4376.7	70.66
2157.3	38.54	4377.	70.78
2157.7	38.53	4377.3	70.8

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2158.	38.54	4377.7	70.77
2158.3	38.56	4378.	70.83
2158.7	38.56	4378.3	70.83
2159.	38.56	4378.7	70.82
2159.3	38.56	4379.	70.82
2159.7	38.54	4379.3	70.85
2160.	38.56	4379.7	70.83
2160.3	38.57	4380.	70.87
2160.7	38.59	4380.3	70.87
2161.	38.57	4380.7	70.88
2161.3	38.56	4381.	70.88
2161.7	38.57	4381.3	70.82
2162.	38.57	4381.7	70.86
2162.3	38.56	4382.	70.86
2162.7	38.56	4382.3	70.86
2163.	38.56	4382.7	70.85
2163.3	38.57	4383.	70.83
2163.7	38.57	4383.3	70.83
2164.	38.57	4383.7	70.82
2164.3	38.59	4384.	70.77
2164.7	38.56	4384.3	70.71
2165.	38.57	4384.7	70.64
2165.3	38.57	4385.	70.61
2165.7	38.59	4385.3	70.61
2166.	38.59	4385.7	70.61
2166.3	38.6	4386.	70.59
2166.7	38.61	4386.3	70.53
2167.	38.61	4386.7	70.49
2167.3	38.59	4387.	70.47
2167.7	38.59	4387.3	70.41
2168.	38.6	4387.7	62.14
2168.3	38.59	4388.	39.03
2168.7	38.61	4388.3	39.05
2169.	38.6	4388.7	39.03
2169.3	38.61	4389.	39.03
2169.7	38.62	4389.3	39.04
2170.	38.63	4389.7	39.06
2170.3	38.62	4390.	39.04
2170.7	38.64	4390.3	39.03
2171.	38.63	4390.7	39.04
2171.3	38.63	4391.	39.06
2171.7	38.64	4391.3	39.05
2172.	38.64	4391.7	39.03
2172.3	38.64	4392.	39.03
2172.7	38.64	4392.3	39.06
2173.	38.65	4392.7	39.05
2173.3	38.65	4393.	39.03
2173.7	38.65	4393.3	39.03
2174.	38.64	4393.7	39.06
2174.3	38.66	4394.	39.05
2174.7	38.66	4394.3	39.03
2175.	38.66	4394.7	39.06
2175.3	38.65	4395.	39.06
2175.7	38.66	4395.3	39.03
2176.	38.66	4395.7	39.03
2176.3	38.66	4396.	39.06
2176.7	38.66	4396.3	39.06
2177.	38.67	4396.7	39.03
2177.3	38.68	4397.	39.05
2177.7	38.68	4397.3	39.05
2178.	38.69	4397.7	39.03
2178.3	38.68	4398.	39.03
2178.7	38.69	4398.3	39.05
2179.	38.69	4398.7	39.05
2179.3	38.68	4399.	39.03
2179.7	38.68	4399.3	39.05

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2180.	38.69	4399.7	39.06
2180.3	38.68	4400.	39.03
2180.7	38.68	4400.3	39.02
2181.	38.68	4400.7	39.06
2181.3	38.69	4401.	39.06
2181.7	38.69	4401.3	39.06
2182.	38.69	4401.7	39.03
2182.3	38.7	4402.	39.05
2182.7	38.7	4402.3	39.05
2183.	38.7	4402.7	39.03
2183.3	38.7	4403.	39.03
2183.7	38.7	4403.3	39.03
2184.	38.69	4403.7	39.02
2184.3	38.69	4404.	39.19
2184.7	38.69	4404.3	39.34
2185.	38.69	4404.7	39.67
2185.3	38.69	4405.	39.67
2185.7	38.7	4405.3	39.63
2186.	38.69	4405.7	39.59
2186.3	38.71	4406.	39.56
2186.7	38.71	4406.3	39.55
2187.	38.72	4406.7	39.5
2187.3	38.71	4407.	39.47
2187.7	38.71	4407.3	39.47
2188.	38.72	4407.7	39.43
2188.3	38.73	4408.	39.42
2188.7	38.71	4408.3	39.42
2189.	38.71	4408.7	39.36
2189.3	38.71	4409.	39.34
2189.7	38.71	4409.3	39.34
2190.	38.71	4409.7	39.3
2190.3	38.71	4410.	39.29
2190.7	38.7	4410.3	39.29
2191.	38.7	4410.7	39.27
2191.3	38.71	4411.	39.25
2191.7	38.7	4411.3	39.25
2192.	38.72	4411.7	39.25
2192.3	38.71	4412.	39.22
2192.7	38.7	4412.3	39.23
2193.	38.71	4412.7	39.22
2193.3	38.71	4413.	39.19
2193.7	38.71	4413.3	39.18
2194.	38.72	4413.7	39.19
2194.3	38.73	4414.	39.17
2194.7	38.73	4414.3	39.18
2195.	38.74	4414.7	39.17
2195.3	38.74	4415.	39.15
2195.7	38.74	4415.3	39.15
2196.	38.73	4415.7	39.15
2196.3	38.73	4416.	39.13
2196.7	38.73	4416.3	39.14
2197.	38.72	4416.7	39.1
2197.3	38.72	4417.	39.1
2197.7	38.74	4417.3	39.1
2198.	38.75	4417.7	39.09
2198.3	38.74	4418.	39.07
2198.7	38.75	4418.3	39.06
2199.	38.74	4418.7	39.06
2199.3	38.75	4419.	39.06
2199.7	38.74	4419.3	39.03
2200.	38.73	4419.7	39.03
2200.3	38.74	4420.	39.03
2200.7	38.74	4420.3	39.02
2201.	38.74	4420.7	39.02
2201.3	38.75	4421.	38.99
2201.7	38.74	4421.3	39.

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2202.	38.74	4421.7	38.99
2202.3	38.74	4422.	38.98
2202.7	38.74	4422.3	38.97
2203.	38.76	4422.7	38.95
2203.3	38.74	4423.	38.7
2203.7	38.75	4423.3	36.6
2204.	38.75	4423.7	34.62
2204.3	38.74	4424.	32.72
2204.7	38.75	4424.3	30.92
2205.	38.74	4424.7	29.19
2205.3	38.76	4425.	27.55
2205.7	38.77	4425.3	25.99
2206.	38.74	4425.7	24.5
2206.3	38.75	4426.	23.06
2206.7	38.74	4426.3	21.71
2207.	38.75	4426.7	20.41
2207.3	38.75	4427.	19.19
2207.7	38.76	4427.3	18.01
2208.	38.76	4427.7	16.9
2208.3	38.75	4428.	15.85
2208.7	38.74	4428.3	14.84
2209.	38.75	4428.7	13.9
2209.3	38.75	4429.	12.99
2209.7	38.74	4429.3	12.12
2210.	38.74	4429.7	11.32
2210.3	38.75	4430.	10.55
2210.7	38.74	4430.3	9.82
2211.	38.74	4430.7	9.12
2211.3	38.74	4431.	8.47
2211.7	38.75	4431.3	7.85
2212.	38.74	4431.7	7.27
2212.3	38.74	4432.	6.72
2212.7	38.74	4432.3	6.18
2213.	38.72	4432.7	5.69
2213.3	38.72	4433.	5.22
2213.7	38.73	4433.3	4.77
2214.	38.73	4433.7	4.35
2214.3	38.74	4434.	3.97
2214.7	38.74	4434.3	3.6
2215.	38.73	4434.7	3.24
2215.3	38.73	4435.	2.91
2215.7	38.72	4435.3	2.59
2216.	38.74	4435.7	2.3
2216.3	38.74	4436.	2.01
2216.7	38.74	4436.3	1.77
2217.	38.74	4436.7	1.53
2217.3	38.73	4437.	1.29
2217.7	38.73	4437.3	1.06
2218.	38.74	4437.7	0.86
2218.3	38.74	4438.	0.67
2218.7	38.74	4438.3	0.48
2219.	38.75	4438.7	0.31
2219.3	38.74	4439.	0.15
2219.7	38.75		

Observation Well No. 2: OW-1

X Location: 132. ft
Y Location: 132. ft

Radial distance from PW-1: 186.6761902 ft

Partially Penetrating Well
Depth to Top of Screen: 45. ft
Depth to Bottom of Screen: 115. ft

No. of Observations: 2831

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.	0.	2834.	0.168
4.	-0.006	2836.	0.168
6.	-0.006	2838.	0.158
8.	0.	2840.	0.168
10.	0.007	2842.	0.168
12.	0.007	2844.	0.168
14.	0.017	2846.	0.168
16.	0.017	2848.	0.168
18.	0.023	2850.	0.168
20.	0.023	2852.	0.174
22.	0.03	2854.	0.168
24.	0.04	2856.	0.174
26.	0.03	2858.	0.168
28.	0.04	2860.	0.174
30.	0.043	2862.	0.174
32.	0.046	2864.	0.174
34.	0.053	2866.	0.168
36.	0.053	2868.	0.174
38.	0.06	2870.	0.174
40.	0.06	2872.	0.174
42.	0.053	2874.	0.174
44.	0.066	2876.	0.174
46.	0.066	2878.	0.174
48.	0.076	2880.	0.174
50.	0.076	2882.	0.174
52.	0.076	2884.	0.174
54.	0.066	2886.	0.174
56.	0.076	2888.	0.174
58.	0.076	2890.	0.174
60.	0.076	2892.	0.174
62.	0.083	2894.	0.168
64.	0.083	2896.	0.174
66.	0.076	2898.	52.93
68.	0.083	2900.	52.93
70.	0.083	2902.	52.93
72.	0.089	2904.	52.93
74.	0.089	2906.	52.93
76.	0.083	2908.	0.158
78.	0.089	2910.	0.184
80.	0.089	2912.	0.184
82.	0.089	2914.	0.184
84.	0.089	2916.	0.171
86.	0.089	2918.	0.184
88.	0.099	2920.	0.181
90.	0.089	2922.	0.171
92.	0.089	2924.	0.174
94.	0.089	2926.	0.181
96.	0.099	2928.	0.174
98.	0.099	2930.	0.181
100.	0.099	2932.	0.181
102.	0.099	2934.	0.181
104.	0.099	2936.	0.174
106.	0.105	2938.	0.174
108.	0.099	2940.	0.174
110.	0.105	2942.	0.174
112.	0.105	2944.	0.165
114.	0.105	2946.	0.174
116.	0.105	2948.	0.174
118.	0.099	2950.	0.174
120.	0.105	2952.	0.174
122.	0.109	2954.	0.174
124.	0.099	2956.	0.174
126.	0.115	2958.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
128.	0.112	2960.	0.174
130.	0.115	2962.	0.174
132.	0.115	2964.	0.181
134.	0.112	2966.	0.174
136.	0.115	2968.	0.165
138.	0.115	2970.	0.174
140.	0.112	2972.	0.174
142.	0.125	2974.	0.174
144.	0.125	2976.	0.174
146.	0.112	2978.	0.174
148.	0.109	2980.	0.174
150.	0.115	2982.	0.181
152.	0.122	2984.	0.181
154.	0.125	2986.	0.181
156.	0.125	2988.	0.181
158.	0.112	2990.	0.174
160.	0.125	2992.	0.187
162.	0.115	2994.	0.181
164.	0.112	2996.	0.181
166.	0.125	2998.	0.181
168.	0.122	3000.	0.181
170.	0.112	3002.	0.181
172.	0.115	3004.	0.181
174.	0.112	3006.	0.181
176.	0.125	3008.	0.174
178.	0.115	3010.	0.174
180.	0.112	3012.	0.181
182.	0.112	3014.	0.174
184.	0.122	3016.	0.181
186.	20.88	3018.	0.181
188.	21.12	3020.	0.181
190.	21.34	3022.	0.174
192.	21.3	3024.	0.181
194.	21.31	3026.	0.181
196.	21.31	3028.	0.181
198.	21.32	3030.	0.181
200.	21.33	3032.	0.181
202.	21.33	3034.	0.181
204.	21.34	3036.	0.187
206.	21.34	3038.	0.181
208.	21.34	3040.	0.181
210.	21.25	3042.	0.181
212.	21.07	3044.	0.181
214.	20.9	3046.	0.174
216.	0.171	3048.	0.181
218.	0.171	3050.	0.174
220.	0.171	3052.	0.174
222.	0.122	3054.	0.174
224.	0.122	3056.	0.181
226.	0.128	3058.	0.181
228.	0.128	3060.	0.181
230.	0.128	3062.	0.187
232.	0.122	3064.	0.174
234.	0.128	3066.	0.181
236.	0.122	3068.	0.181
238.	0.122	3070.	0.187
240.	0.122	3072.	0.181
242.	0.122	3074.	0.181
244.	0.122	3076.	0.181
246.	0.122	3078.	0.181
248.	0.122	3080.	0.174
250.	0.122	3082.	0.181
252.	0.122	3084.	0.174
254.	0.122	3086.	0.181
256.	0.119	3088.	0.181
258.	0.125	3090.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
260.	0.115	3092.	0.187
262.	0.122	3094.	0.187
264.	0.128	3096.	0.187
266.	0.122	3098.	0.181
268.	0.122	3100.	0.181
270.	0.122	3102.	0.187
272.	0.122	3104.	0.181
274.	0.122	3106.	0.181
276.	0.128	3108.	0.181
278.	0.128	3110.	0.181
280.	0.122	3112.	0.181
282.	0.122	3114.	0.181
284.	0.122	3116.	0.181
286.	0.122	3118.	0.181
288.	0.122	3120.	0.181
290.	0.122	3122.	0.187
292.	0.115	3124.	0.174
294.	0.122	3126.	0.181
296.	0.122	3128.	0.181
298.	0.122	3130.	0.187
300.	0.122	3132.	0.181
302.	0.128	3134.	0.174
304.	0.128	3136.	0.181
306.	0.115	3138.	0.181
308.	0.128	3140.	0.187
310.	0.122	3142.	0.187
312.	0.122	3144.	0.187
314.	0.122	3146.	0.187
316.	0.122	3148.	0.181
318.	0.115	3150.	0.181
320.	0.122	3152.	0.181
322.	0.122	3154.	0.187
324.	0.128	3156.	0.187
326.	0.128	3158.	0.187
328.	0.128	3160.	0.181
330.	0.128	3162.	0.181
332.	0.122	3164.	0.187
334.	0.122	3166.	0.181
336.	0.128	3168.	0.181
338.	0.128	3170.	0.181
340.	0.128	3172.	0.174
342.	0.128	3174.	0.187
344.	0.128	3176.	0.181
346.	0.122	3178.	0.187
348.	0.122	3180.	0.181
350.	0.122	3182.	0.187
352.	0.128	3184.	0.181
354.	0.128	3186.	0.187
356.	0.138	3188.	0.187
358.	0.128	3190.	0.187
360.	0.138	3192.	0.181
362.	0.128	3194.	0.181
364.	0.128	3196.	0.187
366.	0.128	3198.	0.181
368.	0.128	3200.	0.181
370.	0.128	3202.	0.187
372.	0.128	3204.	0.181
374.	0.128	3206.	0.181
376.	0.138	3208.	0.181
378.	0.128	3210.	0.174
380.	0.128	3212.	0.187
382.	0.138	3214.	0.187
384.	0.138	3216.	0.187
386.	0.128	3218.	0.187
388.	0.128	3220.	0.181
390.	0.128	3222.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
392.	0.128	3224.	0.181
394.	0.128	3226.	0.181
396.	0.128	3228.	0.187
398.	0.128	3230.	0.174
400.	0.128	3232.	0.181
402.	0.138	3234.	0.181
404.	0.128	3236.	0.187
406.	0.128	3238.	0.181
408.	0.128	3240.	0.187
410.	0.122	3242.	0.181
412.	0.128	3244.	0.181
414.	0.128	3246.	0.174
416.	0.128	3248.	0.181
418.	0.122	3250.	0.181
420.	0.122	3252.	0.181
422.	0.128	3254.	0.181
424.	0.128	3256.	0.187
426.	0.138	3258.	0.174
428.	0.128	3260.	0.174
430.	0.128	3262.	0.174
432.	0.128	3264.	0.174
434.	0.128	3266.	0.181
436.	0.128	3268.	0.181
438.	0.138	3270.	0.181
440.	0.128	3272.	0.181
442.	0.128	3274.	0.181
444.	0.128	3276.	0.181
446.	0.138	3278.	0.181
448.	0.138	3280.	0.174
450.	21.06	3282.	0.181
452.	21.17	3284.	0.174
454.	21.37	3286.	0.181
456.	21.41	3288.	0.181
458.	21.43	3290.	0.181
460.	21.42	3292.	0.174
462.	21.41	3294.	0.174
464.	21.42	3296.	0.181
466.	21.42	3298.	0.181
468.	21.41	3300.	0.181
470.	21.42	3302.	0.174
472.	21.42	3304.	0.181
474.	21.39	3306.	0.181
476.	21.13	3308.	0.181
478.	0.171	3310.	0.181
480.	0.158	3312.	0.181
482.	0.155	3314.	0.174
484.	0.142	3316.	0.181
486.	0.142	3318.	0.181
488.	0.135	3320.	0.174
490.	0.138	3322.	0.181
492.	0.138	3324.	0.174
494.	0.138	3326.	0.174
496.	0.138	3328.	0.174
498.	0.138	3330.	0.174
500.	0.138	3332.	0.174
502.	0.128	3334.	0.174
504.	0.122	3336.	0.187
506.	0.128	3338.	0.181
508.	0.128	3340.	0.174
510.	0.128	3342.	0.174
512.	0.128	3344.	0.181
514.	0.122	3346.	0.181
516.	0.128	3348.	0.174
518.	0.128	3350.	0.181
520.	0.128	3352.	0.181
522.	0.128	3354.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
524.	0.128	3356.	0.181
526.	0.122	3358.	0.174
528.	0.122	3360.	0.174
530.	0.128	3362.	0.174
532.	0.122	3364.	0.174
534.	0.122	3366.	0.174
536.	0.122	3368.	0.174
538.	0.128	3370.	0.181
540.	0.128	3372.	0.181
542.	0.122	3374.	0.174
544.	0.122	3376.	0.181
546.	0.122	3378.	0.181
548.	0.128	3380.	0.184
550.	0.122	3382.	0.181
552.	0.128	3384.	0.187
554.	0.122	3386.	0.181
556.	0.122	3388.	0.181
558.	0.122	3390.	0.187
560.	0.128	3392.	0.174
562.	0.128	3394.	0.181
564.	0.122	3396.	0.174
566.	0.128	3398.	0.174
568.	0.122	3400.	0.174
570.	0.128	3402.	0.174
572.	0.128	3404.	0.181
574.	0.135	3406.	0.174
576.	0.128	3408.	0.181
578.	0.128	3410.	0.174
580.	0.135	3412.	0.181
582.	0.128	3414.	0.187
584.	0.128	3416.	0.174
586.	0.135	3418.	0.181
588.	0.128	3420.	0.181
590.	0.128	3422.	0.181
592.	0.142	3424.	0.181
594.	0.128	3426.	0.174
596.	0.128	3428.	0.181
598.	0.128	3430.	0.181
600.	0.128	3432.	0.174
602.	0.128	3434.	0.181
604.	0.142	3436.	0.181
606.	0.135	3438.	0.174
608.	0.128	3440.	0.181
610.	0.128	3442.	0.174
612.	0.128	3444.	0.181
614.	0.135	3446.	0.174
616.	0.128	3448.	0.181
618.	0.128	3450.	0.181
620.	0.128	3452.	0.181
622.	0.135	3454.	0.174
624.	0.128	3456.	0.181
626.	0.135	3458.	0.187
628.	0.128	3460.	0.181
630.	0.135	3462.	0.181
632.	0.128	3464.	0.181
634.	0.135	3466.	0.174
636.	0.142	3468.	0.174
638.	0.128	3470.	0.181
640.	0.135	3472.	0.181
642.	0.135	3474.	0.181
644.	0.128	3476.	0.174
646.	0.128	3478.	0.174
648.	0.135	3480.	0.181
650.	0.135	3482.	0.181
652.	0.135	3484.	0.181
654.	0.135	3486.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
656.	0.135	3488.	0.181
658.	0.135	3490.	0.181
660.	0.135	3492.	0.181
662.	0.135	3494.	0.181
664.	0.128	3496.	0.181
666.	0.135	3498.	0.181
668.	0.135	3500.	0.187
670.	0.135	3502.	0.181
672.	0.135	3504.	0.181
674.	0.128	3506.	0.187
676.	0.135	3508.	0.174
678.	0.142	3510.	0.174
680.	0.135	3512.	0.187
682.	0.128	3514.	0.181
684.	0.135	3516.	0.181
686.	0.135	3518.	0.181
688.	0.135	3520.	0.181
690.	0.135	3522.	0.181
692.	0.135	3524.	0.181
694.	0.135	3526.	0.181
696.	0.135	3528.	0.181
698.	0.135	3530.	0.181
700.	0.142	3532.	0.181
702.	0.135	3534.	0.187
704.	0.135	3536.	0.181
706.	0.135	3538.	0.174
708.	0.135	3540.	0.181
710.	0.135	3542.	0.181
712.	0.135	3544.	0.181
714.	0.142	3546.	0.181
716.	0.135	3548.	0.187
718.	0.135	3550.	0.181
720.	0.128	3552.	0.181
722.	0.128	3554.	0.174
724.	0.128	3556.	0.181
726.	0.128	3558.	0.181
728.	0.135	3560.	0.181
730.	0.128	3562.	0.187
732.	0.128	3564.	0.187
734.	0.135	3566.	0.187
736.	0.135	3568.	0.187
738.	0.128	3570.	0.181
740.	0.135	3572.	0.181
742.	0.128	3574.	0.174
744.	0.128	3576.	0.187
746.	0.128	3578.	0.181
748.	0.128	3580.	0.187
750.	0.128	3582.	0.181
752.	0.128	3584.	0.187
754.	0.128	3586.	0.187
756.	0.135	3588.	0.187
758.	0.135	3590.	0.187
760.	0.142	3592.	0.181
762.	0.135	3594.	0.187
764.	0.128	3596.	0.181
766.	0.135	3598.	0.181
768.	0.142	3600.	0.181
770.	0.135	3602.	0.187
772.	0.135	3604.	0.187
774.	0.135	3606.	0.181
776.	0.135	3608.	0.181
778.	0.135	3610.	0.187
780.	0.135	3612.	0.187
782.	0.135	3614.	0.187
784.	0.135	3616.	0.181
786.	0.142	3618.	0.187

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
788.	0.142	3620.	0.187
790.	0.142	3622.	0.197
792.	0.142	3624.	0.197
794.	0.142	3626.	0.197
796.	0.135	3628.	0.187
798.	0.142	3630.	0.197
800.	0.142	3632.	0.187
802.	0.142	3634.	0.187
804.	0.142	3636.	0.197
806.	0.135	3638.	0.187
808.	0.151	3640.	0.187
810.	0.135	3642.	0.187
812.	0.142	3644.	0.187
814.	0.142	3646.	0.197
816.	0.142	3648.	0.197
818.	0.142	3650.	0.197
820.	0.142	3652.	0.187
822.	0.142	3654.	0.197
824.	0.142	3656.	0.187
826.	0.142	3658.	0.187
828.	0.135	3660.	0.184
830.	0.135	3662.	0.187
832.	0.142	3664.	0.194
834.	0.142	3666.	0.194
836.	0.135	3668.	0.201
838.	0.142	3670.	0.187
840.	0.142	3672.	0.197
842.	0.142	3674.	0.204
844.	0.142	3676.	0.187
846.	0.142	3678.	0.197
848.	0.142	3680.	0.197
850.	0.151	3682.	0.197
852.	0.142	3684.	0.197
854.	0.142	3686.	0.197
856.	0.135	3688.	0.197
858.	0.135	3690.	0.187
860.	0.151	3692.	0.204
862.	0.135	3694.	0.197
864.	0.135	3696.	0.197
866.	0.135	3698.	0.197
868.	0.142	3700.	0.197
870.	0.151	3702.	0.197
872.	0.142	3704.	0.204
874.	0.142	3706.	0.204
876.	0.142	3708.	0.204
878.	0.151	3710.	0.204
880.	0.135	3712.	0.204
882.	0.151	3714.	0.204
884.	0.142	3716.	0.204
886.	0.142	3718.	0.197
888.	0.142	3720.	0.197
890.	0.135	3722.	0.197
892.	0.142	3724.	0.204
894.	0.142	3726.	0.204
896.	0.151	3728.	0.204
898.	0.142	3730.	0.197
900.	0.142	3732.	0.204
902.	0.151	3734.	0.187
904.	0.142	3736.	0.197
906.	0.142	3738.	0.184
908.	0.142	3740.	0.197
910.	0.142	3742.	0.197
912.	0.142	3744.	0.194
914.	0.142	3746.	0.194
916.	0.135	3748.	0.201
918.	0.135	3750.	0.197

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
920.	0.142	3752.	0.197
922.	0.135	3754.	0.197
924.	0.142	3756.	0.201
926.	0.135	3758.	0.204
928.	0.142	3760.	0.194
930.	0.142	3762.	0.204
932.	0.142	3764.	0.204
934.	0.142	3766.	0.204
936.	0.151	3768.	0.204
938.	0.142	3770.	0.201
940.	0.142	3772.	0.201
942.	0.142	3774.	0.201
944.	0.142	3776.	0.194
946.	0.142	3778.	0.204
948.	0.151	3780.	0.204
950.	0.142	3782.	0.197
952.	0.142	3784.	0.197
954.	0.135	3786.	0.204
956.	0.142	3788.	0.197
958.	0.135	3790.	0.204
960.	0.142	3792.	0.204
962.	0.142	3794.	0.204
964.	0.135	3796.	0.204
966.	0.135	3798.	0.204
968.	0.142	3800.	0.187
970.	0.142	3802.	0.197
972.	0.142	3804.	0.204
974.	0.142	3806.	0.197
976.	0.142	3808.	0.197
978.	0.142	3810.	0.204
980.	0.142	3812.	0.197
982.	0.142	3814.	0.197
984.	0.135	3816.	0.197
986.	0.142	3818.	0.197
988.	0.135	3820.	0.197
990.	0.135	3822.	0.197
992.	0.135	3824.	0.197
994.	0.135	3826.	0.187
996.	0.135	3828.	0.197
998.	0.142	3830.	0.197
1000.	0.135	3832.	0.204
1002.	0.135	3834.	0.204
1004.	0.135	3836.	0.204
1006.	0.135	3838.	0.21
1008.	0.142	3840.	0.204
1010.	0.135	3842.	0.204
1012.	0.135	3844.	0.201
1014.	0.135	3846.	0.197
1016.	0.135	3848.	0.201
1018.	0.135	3850.	0.201
1020.	0.135	3852.	0.204
1022.	0.135	3854.	0.197
1024.	0.135	3856.	0.197
1026.	0.142	3858.	0.204
1028.	0.135	3860.	0.197
1030.	0.135	3862.	0.194
1032.	0.142	3864.	0.197
1034.	0.142	3866.	0.204
1036.	0.142	3868.	0.184
1038.	0.142	3870.	0.197
1040.	0.142	3872.	0.197
1042.	0.142	3874.	0.197
1044.	0.135	3876.	0.197
1046.	0.142	3878.	0.204
1048.	0.142	3880.	0.204
1050.	0.142	3882.	0.194

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1052.	0.135	3884.	0.194
1054.	0.135	3886.	0.197
1056.	0.135	3888.	0.194
1058.	0.135	3890.	0.197
1060.	0.135	3892.	0.197
1062.	0.135	3894.	0.197
1064.	0.142	3896.	0.204
1066.	0.135	3898.	0.194
1068.	0.135	3900.	0.194
1070.	0.128	3902.	0.194
1072.	0.135	3904.	0.201
1074.	0.135	3906.	0.194
1076.	0.135	3908.	0.194
1078.	0.135	3910.	0.201
1080.	0.135	3912.	0.201
1082.	0.135	3914.	0.194
1084.	0.142	3916.	0.194
1086.	0.135	3918.	0.194
1088.	0.135	3920.	0.194
1090.	0.128	3922.	0.194
1092.	0.135	3924.	0.194
1094.	0.135	3926.	0.194
1096.	0.135	3928.	0.201
1098.	0.135	3930.	0.194
1100.	0.128	3932.	0.194
1102.	0.128	3934.	0.194
1104.	0.128	3936.	0.197
1106.	0.135	3938.	0.197
1108.	0.142	3940.	0.204
1110.	0.135	3942.	0.21
1112.	0.135	3944.	0.197
1114.	0.142	3946.	0.184
1116.	0.135	3948.	0.184
1118.	0.142	3950.	0.201
1120.	0.135	3952.	0.194
1122.	0.135	3954.	0.194
1124.	0.135	3956.	0.194
1126.	0.135	3958.	0.194
1128.	0.142	3960.	0.194
1130.	0.142	3962.	0.194
1132.	0.135	3964.	0.197
1134.	0.135	3966.	0.194
1136.	0.142	3968.	0.197
1138.	0.135	3970.	0.194
1140.	0.135	3972.	0.194
1142.	0.142	3974.	0.194
1144.	0.135	3976.	0.184
1146.	0.135	3978.	0.204
1148.	0.135	3980.	0.194
1150.	0.142	3982.	0.197
1152.	0.135	3984.	0.187
1154.	0.142	3986.	0.187
1156.	0.142	3988.	0.194
1158.	0.142	3990.	0.187
1160.	0.142	3992.	0.187
1162.	0.142	3994.	0.194
1164.	0.142	3996.	0.201
1166.	0.142	3998.	0.194
1168.	0.142	4000.	0.197
1170.	0.135	4002.	0.184
1172.	0.142	4004.	0.194
1174.	0.142	4006.	0.194
1176.	0.142	4008.	0.184
1178.	0.142	4010.	0.194
1180.	0.142	4012.	0.194
1182.	0.142	4014.	0.194

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1184.	0.135	4016.	0.194
1186.	0.135	4018.	0.184
1188.	0.142	4020.	0.194
1190.	0.142	4022.	0.184
1192.	0.142	4024.	0.194
1194.	0.142	4026.	0.184
1196.	0.142	4028.	0.194
1198.	0.142	4030.	0.187
1200.	0.135	4032.	0.184
1202.	0.135	4034.	0.194
1204.	0.142	4036.	0.178
1206.	0.142	4038.	0.178
1208.	0.151	4040.	0.184
1210.	0.142	4042.	0.184
1212.	0.135	4044.	0.187
1214.	0.135	4046.	0.184
1216.	0.142	4048.	0.184
1218.	0.142	4050.	0.184
1220.	0.142	4052.	0.184
1222.	0.142	4054.	0.187
1224.	0.142	4056.	0.184
1226.	0.142	4058.	0.184
1228.	0.135	4060.	0.194
1230.	0.142	4062.	0.197
1232.	0.142	4064.	0.194
1234.	0.142	4066.	0.187
1236.	0.142	4068.	0.178
1238.	0.142	4070.	0.197
1240.	0.142	4072.	0.194
1242.	0.142	4074.	0.184
1244.	0.135	4076.	0.197
1246.	0.135	4078.	0.184
1248.	0.142	4080.	0.184
1250.	0.135	4082.	0.194
1252.	0.135	4084.	0.194
1254.	0.135	4086.	0.184
1256.	0.135	4088.	0.184
1258.	0.135	4090.	0.187
1260.	0.135	4092.	0.184
1262.	0.148	4094.	0.184
1264.	0.135	4096.	0.184
1266.	0.135	4098.	0.184
1268.	0.135	4100.	0.194
1270.	0.135	4102.	0.194
1272.	0.135	4104.	0.184
1274.	0.142	4106.	0.178
1276.	0.135	4108.	0.184
1278.	0.142	4110.	0.194
1280.	0.142	4112.	0.184
1282.	0.142	4114.	0.184
1284.	0.142	4116.	0.184
1286.	0.142	4118.	0.178
1288.	0.142	4120.	0.184
1290.	0.142	4122.	0.184
1292.	0.135	4124.	0.184
1294.	0.135	4126.	0.184
1296.	0.135	4128.	0.184
1298.	0.135	4130.	0.187
1300.	0.142	4132.	0.184
1302.	0.142	4134.	0.184
1304.	0.142	4136.	0.184
1306.	0.142	4138.	0.184
1308.	0.142	4140.	0.184
1310.	0.135	4142.	0.194
1312.	0.148	4144.	0.184
1314.	0.142	4146.	0.184

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1316.	0.142	4148.	0.184
1318.	0.148	4150.	0.184
1320.	0.142	4152.	0.197
1322.	0.142	4154.	0.184
1324.	0.142	4156.	0.184
1326.	0.142	4158.	0.184
1328.	0.142	4160.	0.184
1330.	0.142	4162.	0.187
1332.	0.151	4164.	0.187
1334.	0.151	4166.	0.184
1336.	0.142	4168.	0.187
1338.	0.151	4170.	0.187
1340.	0.142	4172.	0.187
1342.	0.135	4174.	0.187
1344.	0.142	4176.	0.187
1346.	0.142	4178.	0.187
1348.	0.142	4180.	0.187
1350.	0.142	4182.	0.184
1352.	0.142	4184.	0.184
1354.	0.151	4186.	0.184
1356.	0.151	4188.	0.184
1358.	0.151	4190.	0.184
1360.	0.151	4192.	0.187
1362.	0.151	4194.	0.184
1364.	0.151	4196.	0.178
1366.	0.151	4198.	0.184
1368.	0.151	4200.	0.184
1370.	0.151	4202.	0.178
1372.	0.142	4204.	0.184
1374.	0.142	4206.	0.178
1376.	0.151	4208.	0.184
1378.	0.142	4210.	0.184
1380.	0.148	4212.	0.184
1382.	0.142	4214.	0.184
1384.	0.151	4216.	0.178
1386.	0.142	4218.	0.184
1388.	0.155	4220.	0.184
1390.	0.148	4222.	0.184
1392.	0.151	4224.	0.178
1394.	0.142	4226.	0.184
1396.	0.128	4228.	0.184
1398.	0.142	4230.	0.184
1400.	0.598	4232.	0.184
1402.	0.174	4234.	0.184
1404.	4.813	4236.	0.194
1406.	21.01	4238.	0.194
1408.	21.24	4240.	0.194
1410.	21.25	4242.	0.194
1412.	21.23	4244.	0.194
1414.	21.23	4246.	0.194
1416.	21.23	4248.	0.194
1418.	21.23	4250.	0.184
1420.	21.24	4252.	0.201
1422.	21.24	4254.	0.194
1424.	21.25	4256.	0.194
1426.	21.24	4258.	0.194
1428.	21.25	4260.	0.194
1430.	21.25	4262.	0.194
1432.	21.25	4264.	0.194
1434.	21.25	4266.	0.194
1436.	21.24	4268.	0.194
1438.	21.25	4270.	0.194
1440.	21.24	4272.	0.184
1442.	21.25	4274.	0.194
1444.	21.24	4276.	0.201
1446.	21.13	4278.	0.201

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1448.	20.88	4280.	0.194
1450.	17.28	4282.	0.184
1452.	0.161	4284.	0.194
1454.	0.158	4286.	0.201
1456.	0.158	4288.	0.201
1458.	0.151	4290.	0.194
1460.	0.145	4292.	0.194
1462.	0.158	4294.	0.201
1464.	0.151	4296.	0.201
1466.	0.145	4298.	0.194
1468.	0.142	4300.	0.194
1470.	0.151	4302.	0.194
1472.	0.142	4304.	0.194
1474.	0.142	4306.	0.201
1476.	0.142	4308.	0.201
1478.	0.142	4310.	0.194
1480.	0.142	4312.	0.194
1482.	0.148	4314.	0.201
1484.	0.142	4316.	0.194
1486.	0.142	4318.	0.201
1488.	0.142	4320.	0.194
1490.	0.142	4322.	0.201
1492.	0.142	4324.	0.201
1494.	0.142	4326.	0.201
1496.	0.142	4328.	0.207
1498.	0.142	4330.	0.201
1500.	0.142	4332.	0.201
1502.	0.142	4334.	0.201
1504.	0.148	4336.	0.204
1506.	0.142	4338.	0.207
1508.	0.142	4340.	0.201
1510.	0.142	4342.	0.201
1512.	0.148	4344.	0.194
1514.	0.151	4346.	0.194
1516.	0.142	4348.	0.204
1518.	0.142	4350.	0.204
1520.	0.142	4352.	0.201
1522.	0.142	4354.	0.201
1524.	0.142	4356.	0.201
1526.	0.142	4358.	0.201
1528.	0.135	4360.	52.93
1530.	0.135	4362.	52.93
1532.	0.135	4364.	52.93
1534.	0.142	4366.	52.93
1536.	0.142	4368.	52.93
1538.	0.142	4370.	52.93
1540.	0.142	4372.	52.93
1542.	0.142	4374.	52.93
1544.	0.135	4376.	52.93
1546.	0.142	4378.	52.93
1548.	0.135	4380.	52.93
1550.	0.145	4382.	52.93
1552.	0.142	4384.	52.93
1554.	0.138	4386.	52.93
1556.	0.135	4388.	52.93
1558.	0.138	4390.	52.93
1560.	0.135	4392.	0.201
1562.	0.142	4394.	0.21
1564.	0.135	4396.	0.21
1566.	0.142	4398.	0.217
1568.	0.142	4400.	0.204
1570.	0.142	4402.	0.204
1572.	0.142	4404.	0.201
1574.	0.142	4406.	0.21
1576.	0.151	4408.	0.21
1578.	0.142	4410.	0.201

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1580.	0.142	4412.	0.21
1582.	0.135	4414.	0.201
1584.	0.142	4416.	0.201
1586.	0.142	4418.	0.201
1588.	0.145	4420.	0.201
1590.	0.142	4422.	0.201
1592.	0.138	4423.	0.201
1594.	0.142	4424.	0.21
1596.	0.142	4425.	0.197
1598.	0.142	4426.	0.201
1600.	0.148	4427.	0.201
1602.	0.142	4428.	0.187
1604.	0.142	4429.	0.187
1606.	0.142	4430.	0.187
1608.	0.142	4431.	0.181
1610.	0.142	4432.	0.174
1612.	0.145	4433.	0.165
1614.	0.145	4434.	0.174
1616.	0.148	4435.	0.165
1618.	0.142	4436.	0.165
1620.	0.142	4437.	0.158
1622.	0.148	4438.	0.151
1624.	0.148	4439.	0.151
1626.	0.142	4440.	0.142
1628.	0.148	4441.	0.142
1630.	0.142	4442.	0.142
1632.	0.145	4443.	0.142
1634.	0.151	4444.	0.142
1636.	0.145	4445.	0.135
1638.	0.145	4446.	0.142
1640.	0.145	4447.	0.135
1642.	0.145	4448.	0.135
1644.	0.145	4449.	0.135
1646.	0.145	4450.	0.135
1648.	0.151	4451.	0.128
1650.	0.145	4452.	0.128
1652.	0.151	4453.	0.128
1654.	0.151	4454.	0.128
1656.	0.145	4455.	0.128
1658.	0.145	4456.	0.128
1660.	0.145	4457.	0.128
1662.	0.145	4458.	0.128
1664.	0.151	4459.	0.128
1666.	0.145	4460.	0.128
1668.	0.151	4461.	0.128
1670.	0.151	4462.	0.122
1672.	0.145	4463.	0.122
1674.	0.145	4464.	0.128
1676.	0.145	4465.	0.128
1678.	0.151	4466.	0.112
1680.	0.151	4467.	0.112
1682.	0.142	4468.	0.122
1684.	0.145	4469.	0.122
1686.	0.151	4470.	0.122
1688.	0.145	4471.	0.122
1690.	0.145	4472.	0.122
1692.	0.148	4473.	0.122
1694.	0.145	4474.	0.105
1696.	0.145	4475.	0.112
1698.	0.145	4476.	0.112
1700.	0.138	4477.	0.112
1702.	0.145	4478.	0.112
1704.	0.151	4479.	0.112
1706.	0.151	4480.	0.112
1708.	0.138	4481.	0.105
1710.	0.145	4482.	0.112

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1712.	0.151	4483.	0.122
1714.	0.151	4484.	0.112
1716.	0.142	4485.	0.112
1718.	0.148	4486.	0.112
1720.	0.145	4487.	0.122
1722.	0.148	4488.	0.112
1724.	0.151	4489.	0.122
1726.	0.151	4490.	0.112
1728.	0.138	4491.	0.112
1730.	0.138	4492.	0.105
1732.	0.145	4493.	0.105
1734.	0.145	4494.	0.112
1736.	0.142	4495.	0.112
1738.	0.151	4496.	0.105
1740.	0.145	4497.	0.112
1742.	0.145	4498.	0.105
1744.	0.145	4499.	0.112
1746.	0.145	4500.	0.105
1748.	0.145	4501.	0.112
1750.	0.138	4502.	0.112
1752.	0.145	4503.	0.112
1754.	0.145	4504.	0.105
1756.	0.138	4505.	0.112
1758.	0.145	4506.	0.105
1760.	0.138	4507.	0.105
1762.	0.151	4508.	0.105
1764.	0.145	4509.	0.112
1766.	0.145	4510.	0.112
1768.	0.138	4511.	0.105
1770.	0.145	4512.	0.112
1772.	0.145	4513.	0.105
1774.	0.138	4514.	0.099
1776.	0.145	4515.	0.105
1778.	0.145	4516.	0.105
1780.	0.151	4517.	0.105
1782.	0.145	4518.	0.105
1784.	0.138	4519.	0.105
1786.	0.138	4520.	0.099
1788.	0.138	4521.	0.105
1790.	0.138	4522.	0.099
1792.	0.145	4523.	0.105
1794.	0.145	4524.	0.105
1796.	0.151	4525.	0.109
1798.	0.138	4526.	0.105
1800.	0.145	4527.	0.105
1802.	0.135	4528.	0.105
1804.	0.145	4529.	0.105
1806.	0.145	4530.	0.105
1808.	0.145	4531.	0.099
1810.	0.145	4532.	0.099
1812.	0.138	4533.	0.099
1814.	0.142	4534.	0.099
1816.	0.148	4535.	0.099
1818.	0.142	4536.	0.105
1820.	0.142	4537.	0.099
1822.	0.142	4538.	0.105
1824.	0.135	4539.	0.099
1826.	0.135	4540.	0.099
1828.	0.135	4541.	0.099
1830.	0.142	4542.	0.099
1832.	0.135	4543.	0.099
1834.	0.142	4544.	0.099
1836.	0.142	4545.	0.099
1838.	0.142	4546.	0.099
1840.	0.142	4547.	0.089
1842.	0.138	4548.	0.099

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1844.	0.145	4549.	0.099
1846.	0.145	4550.	0.089
1848.	0.142	4551.	0.096
1850.	0.145	4552.	0.089
1852.	0.145	4553.	0.099
1854.	0.145	4554.	0.102
1856.	0.138	4555.	0.099
1858.	0.138	4556.	0.089
1860.	0.145	4557.	0.089
1862.	0.142	4558.	0.089
1864.	0.145	4559.	0.083
1866.	0.138	4560.	0.099
1868.	0.145	4561.	0.089
1870.	0.145	4562.	0.083
1872.	0.138	4563.	0.089
1874.	0.138	4564.	0.089
1876.	0.138	4565.	0.089
1878.	0.132	4566.	0.083
1880.	0.132	4567.	0.089
1882.	0.138	4568.	0.089
1884.	0.138	4569.	0.076
1886.	0.138	4570.	0.083
1888.	0.138	4571.	0.083
1890.	0.145	4572.	0.076
1892.	0.138	4573.	0.083
1894.	0.145	4574.	0.083
1896.	0.138	4575.	0.083
1898.	0.132	4576.	0.089
1900.	0.138	4577.	0.083
1902.	0.145	4578.	0.083
1904.	0.142	4579.	0.096
1906.	0.142	4580.	0.089
1908.	0.135	4581.	0.089
1910.	0.135	4582.	0.083
1912.	0.132	4583.	0.089
1914.	0.135	4584.	0.083
1916.	0.125	4585.	0.099
1918.	0.135	4586.	0.083
1920.	0.138	4587.	0.083
1922.	0.142	4588.	0.083
1924.	0.135	4589.	0.076
1926.	0.135	4590.	0.083
1928.	0.135	4591.	0.083
1930.	0.135	4592.	0.083
1932.	0.135	4593.	0.076
1934.	0.135	4594.	0.076
1936.	0.135	4595.	0.083
1938.	0.135	4596.	0.083
1940.	0.135	4597.	0.083
1942.	0.145	4598.	0.083
1944.	0.138	4599.	0.083
1946.	0.138	4600.	0.083
1948.	0.138	4601.	0.076
1950.	0.138	4602.	0.083
1952.	0.138	4603.	0.083
1954.	0.138	4604.	0.083
1956.	0.138	4605.	0.086
1958.	0.132	4606.	0.086
1960.	0.138	4607.	0.089
1962.	0.145	4608.	0.083
1964.	0.151	4609.	0.076
1966.	0.138	4610.	0.083
1968.	0.138	4611.	0.076
1970.	0.138	4612.	0.076
1972.	0.132	4613.	0.079
1974.	0.138	4614.	0.076

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1976.	0.138	4615.	0.076
1978.	0.138	4616.	0.076
1980.	0.132	4617.	0.083
1982.	0.135	4618.	0.083
1984.	0.132	4619.	0.076
1986.	0.145	4620.	0.076
1988.	0.135	4621.	0.076
1990.	0.138	4622.	0.083
1992.	0.145	4623.	0.083
1994.	0.145	4624.	0.083
1996.	0.135	4625.	0.083
1998.	0.135	4626.	0.076
2000.	0.132	4627.	0.076
2002.	0.138	4628.	0.076
2004.	0.145	4629.	0.066
2006.	0.125	4630.	0.083
2008.	0.145	4631.	0.076
2010.	0.142	4632.	0.076
2012.	0.135	4633.	0.076
2014.	0.142	4634.	0.076
2016.	0.135	4635.	0.076
2018.	0.135	4636.	0.076
2020.	0.138	4637.	0.076
2022.	0.135	4638.	0.076
2024.	0.135	4639.	0.083
2026.	0.138	4640.	0.076
2028.	0.145	4641.	0.076
2030.	0.138	4642.	0.076
2032.	0.138	4643.	0.066
2034.	0.138	4644.	0.076
2036.	0.138	4645.	0.076
2038.	0.138	4646.	0.076
2040.	0.138	4647.	0.076
2042.	0.138	4648.	0.076
2044.	0.145	4649.	0.083
2046.	0.138	4650.	0.076
2048.	0.138	4651.	0.076
2050.	0.132	4652.	0.066
2052.	0.138	4653.	0.076
2054.	0.145	4654.	0.083
2056.	0.145	4655.	0.076
2058.	0.145	4656.	0.076
2060.	0.132	4657.	0.083
2062.	0.138	4658.	0.083
2064.	0.145	4659.	0.076
2066.	0.138	4660.	0.076
2068.	0.132	4661.	0.076
2070.	0.138	4662.	0.076
2072.	0.145	4663.	0.076
2074.	0.145	4664.	0.066
2076.	0.151	4665.	0.066
2078.	0.145	4666.	0.076
2080.	0.151	4667.	0.066
2082.	0.151	4668.	0.066
2084.	0.145	4669.	0.076
2086.	0.145	4670.	0.076
2088.	0.145	4671.	0.076
2090.	0.151	4672.	0.076
2092.	0.151	4673.	0.076
2094.	0.151	4674.	0.083
2096.	0.145	4675.	0.076
2098.	0.145	4676.	0.076
2100.	0.145	4677.	0.066
2102.	0.151	4678.	0.076
2104.	0.145	4679.	0.066
2106.	0.145	4680.	0.076

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2108.	0.151	4681.	0.076
2110.	0.151	4682.	0.066
2112.	0.151	4683.	0.066
2114.	0.151	4684.	0.079
2116.	0.151	4685.	0.079
2118.	0.151	4686.	0.079
2120.	0.151	4687.	0.076
2122.	0.151	4688.	0.079
2124.	0.151	4689.	0.076
2126.	0.151	4690.	0.076
2128.	0.151	4691.	0.076
2130.	0.145	4692.	0.076
2132.	0.151	4693.	0.066
2134.	0.151	4694.	0.076
2136.	0.151	4695.	0.076
2138.	0.151	4696.	0.079
2140.	0.145	4697.	0.079
2142.	0.151	4698.	0.086
2144.	0.151	4699.	0.079
2146.	0.151	4700.	0.076
2148.	0.151	4701.	0.076
2150.	0.145	4702.	0.066
2152.	0.151	4703.	0.069
2154.	0.151	4704.	0.076
2156.	0.158	4705.	0.066
2158.	0.145	4706.	0.079
2160.	0.145	4707.	0.066
2162.	0.151	4708.	0.079
2164.	0.151	4709.	0.069
2166.	0.151	4710.	0.069
2168.	0.151	4711.	0.079
2170.	0.151	4712.	0.079
2172.	0.158	4713.	0.076
2174.	0.151	4714.	0.079
2176.	0.158	4715.	0.079
2178.	0.151	4716.	0.079
2180.	0.151	4717.	0.079
2182.	0.151	4718.	0.079
2184.	0.151	4719.	0.066
2186.	0.151	4720.	0.066
2188.	0.151	4721.	0.076
2190.	0.151	4722.	0.076
2192.	0.151	4723.	0.066
2194.	0.151	4724.	0.069
2196.	0.151	4725.	0.079
2198.	0.151	4726.	0.079
2200.	0.158	4727.	0.076
2202.	0.158	4728.	0.069
2204.	0.158	4729.	0.076
2206.	0.158	4730.	0.076
2208.	0.158	4731.	0.076
2210.	0.151	4732.	0.079
2212.	0.158	4733.	0.076
2214.	0.158	4734.	0.076
2216.	0.158	4735.	0.076
2218.	0.158	4736.	0.066
2220.	0.158	4737.	0.076
2222.	0.151	4738.	0.076
2224.	0.168	4739.	0.083
2226.	0.158	4740.	0.083
2228.	0.158	4741.	0.076
2230.	0.158	4742.	0.069
2232.	0.168	4743.	0.076
2234.	0.168	4744.	0.076
2236.	0.168	4745.	0.076
2238.	0.158	4746.	0.079

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2240.	0.168	4747.	0.076
2242.	0.158	4748.	0.066
2244.	0.168	4749.	0.076
2246.	0.168	4750.	0.076
2248.	0.158	4751.	0.076
2250.	0.158	4752.	0.079
2252.	0.158	4753.	0.066
2254.	0.158	4754.	0.079
2256.	0.168	4755.	0.069
2258.	0.158	4756.	0.076
2260.	0.168	4757.	0.066
2262.	0.168	4758.	0.076
2264.	0.168	4759.	0.076
2266.	0.168	4760.	0.076
2268.	0.158	4761.	0.076
2270.	0.158	4762.	0.076
2272.	0.168	4763.	0.076
2274.	0.168	4764.	0.076
2276.	0.155	4765.	0.076
2278.	0.161	4766.	0.079
2280.	0.155	4767.	0.076
2282.	0.158	4768.	0.076
2284.	0.155	4769.	0.076
2286.	0.158	4770.	0.076
2288.	0.155	4771.	0.076
2290.	0.168	4772.	0.076
2292.	0.158	4773.	0.083
2294.	0.158	4774.	0.076
2296.	0.168	4775.	0.076
2298.	0.158	4776.	0.076
2300.	0.168	4777.	0.079
2302.	0.158	4778.	0.076
2304.	0.158	4779.	0.076
2306.	0.158	4780.	0.076
2308.	0.158	4781.	0.076
2310.	0.168	4782.	0.069
2312.	0.158	4783.	0.076
2314.	0.158	4784.	0.076
2316.	0.158	4785.	0.079
2318.	0.158	4786.	0.076
2320.	0.168	4787.	0.076
2322.	0.168	4788.	0.086
2324.	0.168	4789.	0.079
2326.	0.158	4790.	0.079
2328.	0.168	4791.	0.076
2330.	0.168	4792.	0.069
2332.	0.168	4793.	0.066
2334.	0.168	4794.	0.079
2336.	0.158	4795.	0.069
2338.	0.158	4796.	0.069
2340.	0.158	4797.	0.076
2342.	0.158	4798.	0.076
2344.	0.158	4799.	0.076
2346.	0.158	4800.	0.083
2348.	0.158	4801.	0.066
2350.	0.158	4802.	0.076
2352.	0.158	4803.	0.076
2354.	0.168	4804.	0.066
2356.	0.158	4805.	0.076
2358.	0.158	4806.	0.079
2360.	0.158	4807.	0.069
2362.	0.151	4808.	0.079
2364.	0.158	4809.	0.069
2366.	0.151	4810.	0.079
2368.	0.158	4811.	0.079
2370.	0.151	4812.	0.079

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2372.	0.158	4813.	0.079
2374.	0.158	4814.	0.079
2376.	0.158	4815.	0.079
2378.	0.158	4816.	0.069
2380.	0.168	4817.	0.079
2382.	0.158	4818.	0.069
2384.	0.158	4819.	0.069
2386.	0.158	4820.	0.076
2388.	0.158	4821.	0.076
2390.	0.158	4822.	0.079
2392.	0.155	4823.	0.079
2394.	0.168	4824.	0.076
2396.	0.158	4825.	0.069
2398.	0.158	4826.	0.069
2400.	0.158	4827.	0.066
2402.	0.168	4828.	0.079
2404.	0.151	4829.	0.069
2406.	0.151	4830.	0.079
2408.	0.158	4831.	0.069
2410.	0.158	4832.	0.079
2412.	0.168	4833.	0.079
2414.	0.158	4834.	0.069
2416.	0.151	4835.	0.069
2418.	0.158	4836.	0.076
2420.	0.158	4837.	0.069
2422.	0.151	4838.	0.079
2424.	0.151	4839.	0.066
2426.	0.158	4840.	0.076
2428.	0.158	4841.	0.066
2430.	0.168	4842.	0.069
2432.	0.158	4843.	0.066
2434.	0.158	4844.	0.076
2436.	0.158	4845.	0.076
2438.	0.158	4846.	0.066
2440.	0.158	4847.	0.066
2442.	0.151	4848.	0.076
2444.	0.151	4849.	0.083
2446.	0.158	4850.	0.079
2448.	0.151	4851.	0.066
2450.	0.158	4852.	0.076
2452.	0.158	4853.	0.066
2454.	0.158	4854.	0.066
2456.	0.151	4855.	0.076
2458.	0.158	4856.	0.076
2460.	0.158	4857.	0.066
2462.	0.158	4858.	0.079
2464.	0.158	4859.	0.066
2466.	0.151	4860.	0.066
2468.	0.158	4861.	0.063
2470.	0.158	4862.	0.069
2472.	0.151	4863.	0.069
2474.	0.158	4864.	0.069
2476.	0.158	4865.	0.069
2478.	0.158	4866.	0.066
2480.	0.151	4867.	0.069
2482.	0.158	4868.	0.06
2484.	0.151	4869.	0.069
2486.	0.158	4870.	0.066
2488.	0.158	4871.	0.069
2490.	0.151	4872.	0.079
2492.	0.158	4873.	0.069
2494.	0.151	4874.	0.063
2496.	0.158	4875.	0.063
2498.	0.151	4876.	0.069
2500.	0.158	4877.	0.069
2502.	0.158	4878.	0.069

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2504.	0.158	4879.	0.069
2506.	0.158	4880.	0.069
2508.	0.158	4881.	0.069
2510.	0.151	4882.	0.063
2512.	0.151	4883.	0.069
2514.	0.151	4884.	0.066
2516.	0.158	4885.	0.066
2518.	0.158	4886.	0.066
2520.	0.158	4887.	0.076
2522.	0.151	4888.	0.069
2524.	0.151	4889.	0.076
2526.	0.151	4890.	0.069
2528.	0.158	4891.	0.066
2530.	0.158	4892.	0.066
2532.	0.158	4893.	0.066
2534.	0.158	4894.	0.079
2536.	0.151	4895.	0.069
2538.	0.158	4896.	0.066
2540.	0.158	4897.	0.063
2542.	0.151	4898.	0.069
2544.	0.151	4899.	0.069
2546.	0.151	4900.	0.066
2548.	0.158	4901.	0.063
2550.	0.151	4902.	0.063
2552.	0.151	4903.	0.06
2554.	0.158	4904.	0.066
2556.	0.158	4905.	0.063
2558.	0.158	4906.	0.069
2560.	0.158	4907.	0.069
2562.	0.158	4908.	0.069
2564.	0.158	4909.	0.069
2566.	0.158	4910.	0.063
2568.	0.151	4911.	0.063
2570.	0.151	4912.	0.069
2572.	0.168	4913.	0.069
2574.	0.158	4914.	0.069
2576.	0.158	4915.	0.069
2578.	0.158	4916.	0.063
2580.	0.158	4917.	0.069
2582.	0.158	4918.	0.063
2584.	0.158	4919.	0.069
2586.	0.151	4920.	0.063
2588.	0.158	4921.	0.063
2590.	0.151	4922.	0.063
2592.	0.151	4923.	0.06
2594.	0.158	4924.	0.063
2596.	0.151	4925.	0.063
2598.	0.151	4926.	0.063
2600.	0.145	4927.	0.069
2602.	0.151	4928.	0.06
2604.	0.151	4929.	0.069
2606.	0.145	4930.	0.063
2608.	0.151	4931.	0.063
2610.	0.151	4932.	0.063
2612.	0.151	4933.	0.069
2614.	0.151	4934.	0.063
2616.	0.151	4935.	0.069
2618.	0.145	4936.	0.069
2620.	0.151	4937.	0.063
2622.	0.151	4938.	0.063
2624.	0.151	4939.	0.069
2626.	0.151	4940.	0.069
2628.	0.151	4941.	0.069
2630.	0.158	4942.	0.063
2632.	0.158	4943.	0.063
2634.	0.158	4944.	0.063

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2636.	0.151	4945.	0.063
2638.	0.158	4946.	0.063
2640.	0.151	4947.	0.063
2642.	0.151	4948.	0.063
2644.	0.151	4949.	0.063
2646.	0.151	4950.	0.063
2648.	0.151	4951.	0.063
2650.	0.151	4952.	0.056
2652.	0.151	4953.	0.063
2654.	0.151	4954.	0.063
2656.	0.158	4955.	0.056
2658.	0.151	4956.	0.056
2660.	0.145	4957.	0.056
2662.	0.151	4958.	0.063
2664.	0.158	4959.	0.056
2666.	0.158	4960.	0.063
2668.	0.158	4961.	0.063
2670.	0.158	4962.	0.063
2672.	0.151	4963.	0.056
2674.	0.158	4964.	0.056
2676.	0.158	4965.	0.056
2678.	0.158	4966.	0.056
2680.	0.151	4967.	0.046
2682.	0.151	4968.	0.046
2684.	0.158	4969.	0.056
2686.	0.151	4970.	0.056
2688.	0.158	4971.	0.063
2690.	0.158	4972.	0.063
2692.	0.158	4973.	0.046
2694.	0.151	4974.	0.056
2696.	0.158	4975.	0.056
2698.	0.158	4976.	0.06
2700.	0.151	4977.	0.056
2702.	0.158	4978.	0.046
2704.	0.151	4979.	0.056
2706.	0.151	4980.	0.056
2708.	0.158	4981.	0.056
2710.	0.158	4982.	0.046
2712.	0.151	4983.	0.056
2714.	0.158	4984.	0.056
2716.	0.158	4985.	0.056
2718.	0.151	4986.	0.056
2720.	0.158	4987.	0.046
2722.	0.158	4988.	0.046
2724.	0.158	4989.	0.046
2726.	0.158	4990.	0.046
2728.	0.158	4991.	0.046
2730.	0.158	4992.	0.056
2732.	0.158	4993.	0.056
2734.	0.151	4994.	0.056
2736.	0.158	4995.	0.046
2738.	0.151	4996.	0.046
2740.	0.151	4997.	0.046
2742.	0.145	4998.	0.046
2744.	0.158	4999.	0.046
2746.	0.158	5000.	0.046
2748.	0.158	5001.	0.046
2750.	0.158	5002.	0.056
2752.	0.158	5003.	0.056
2754.	0.151	5004.	0.056
2756.	0.168	5005.	0.056
2758.	0.158	5006.	0.056
2760.	0.158	5007.	0.056
2762.	0.151	5008.	0.046
2764.	0.158	5009.	0.056
2766.	0.158	5010.	0.046

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2768.	0.151	5011.	0.056
2770.	0.168	5012.	0.046
2772.	0.168	5013.	0.046
2774.	0.168	5014.	0.046
2776.	0.158	5015.	0.046
2778.	0.158	5016.	0.046
2780.	0.158	5017.	0.043
2782.	0.158	5018.	0.043
2784.	0.158	5019.	0.043
2786.	0.158	5020.	0.046
2788.	0.158	5021.	0.046
2790.	0.158	5022.	0.046
2792.	0.158	5023.	0.046
2794.	0.158	5024.	0.046
2796.	0.158	5025.	0.046
2798.	0.158	5026.	0.046
2800.	0.158	5027.	0.046
2802.	0.158	5028.	0.046
2804.	0.151	5029.	0.046
2806.	0.158	5030.	0.046
2808.	0.158	5031.	0.05
2810.	0.158	5032.	0.05
2812.	0.158	5033.	0.046
2814.	0.158	5034.	0.05
2816.	0.168	5035.	0.056
2818.	0.168	5036.	0.046
2820.	0.158	5037.	0.05
2822.	0.158	5038.	0.043
2824.	0.158	5039.	0.046
2826.	0.158	5040.	0.043
2828.	0.158	5041.	0.046
2830.	0.168	5042.	0.04
2832.	0.168		

SOLUTION

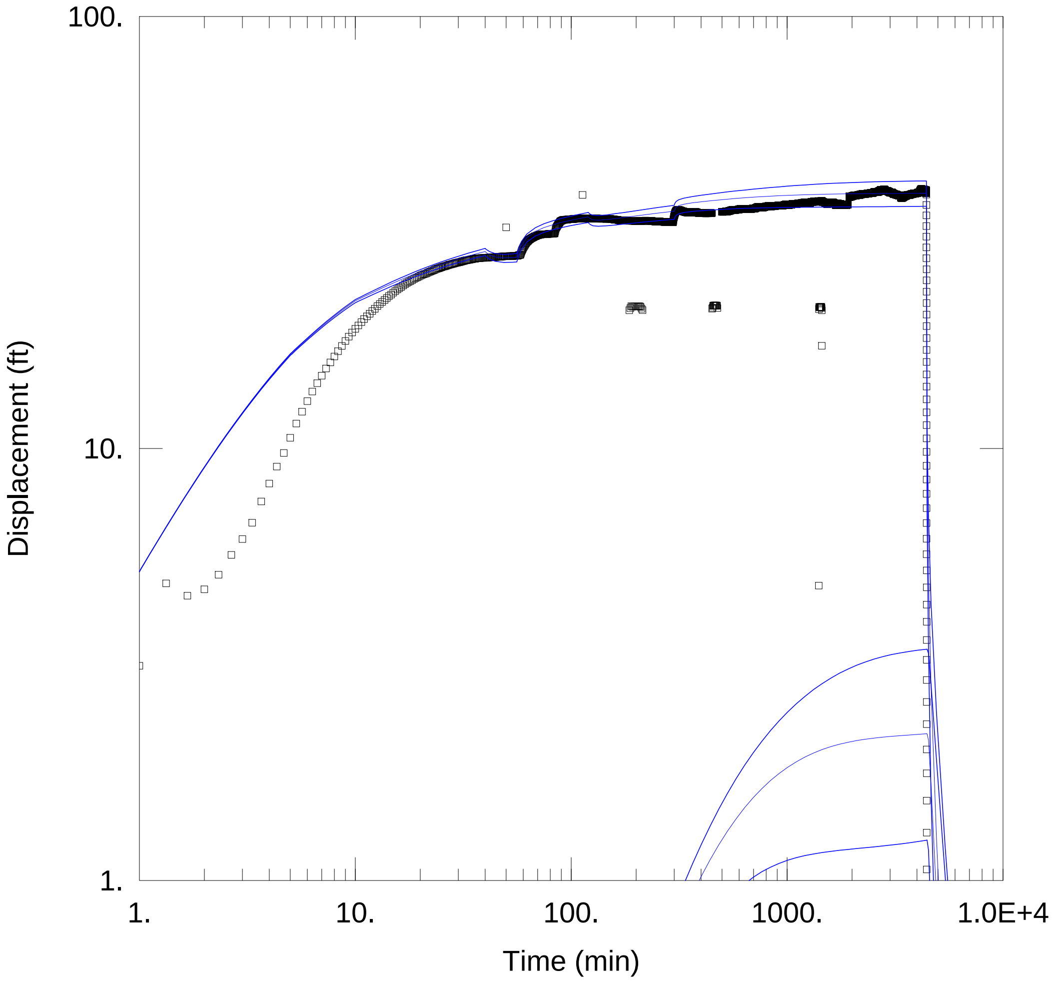
Pumping Test
Aquifer Model: Unconfined
Solution Method: Moench

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.1242	ft^2/min
S	0.003162	
Sy	0.3215	
Kz/Kr	0.2268	
Sw	0.	
r(w)	0.83	ft
r(c)	0.416	ft
alpha	100.	min^{-1}

K = T/b = 0.0009933 ft/min (0.0005046 cm/sec)
Ss = S/b = 2.53E-5 1/ft



PW-1 SODA MT. SOLAR PUMPING AND RECOVERY TEST OCTOBER 6-10, 2014

Data Set: C:\...\ow-1_1410080943_PW-1aqt2.aqt
Date: 10/14/14 Time: 21:54:35

PROJECT INFORMATION

Company: Burns & McDonnell
Client: Panorama/Soda Mt Solar
Location: Soda Mt. Valley
Test Well: PW-1
Test Date: 10/6/14

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 0.2268

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0
OW-1	132	132

SOLUTION

Aquifer Model: Unconfined Solution Method: Moench

T = 0.1242 ft^2/min
Sy = 0.3215
Sw = 0.
r(c) = 0.416 ft

S = 0.003162
Kz/Kr = 0.2268
r(w) = 0.83 ft
alpha = 100. min^{-1}

Data Set: C:\Users\gkenoyer\Documents\Projects\Soda Mt\Well Construction\Aquifer Test\PT Data\OW-1\CSV\ow-1_14
Title: OW-1 Soda Mt. Solar Pump and Recovery Test, October 6-10, 2014
Date: 10/16/14
Time: 16:32:36

PROJECT INFORMATION

Company: Burns & McDonnell
Client: Panorama/Soda Mt Solar
Location: Soda Mt. Valley
Test Date: 10/6/14
Test Well: PW-1

AQUIFER DATA

Saturated Thickness: 125. ft
Anisotropy Ratio (Kz/Kr): 0.1794

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: PW-1

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.416 ft
Well Radius: 0.83 ft

Partially Penetrating Well
Depth to Top of Screen: 45. ft
Depth to Bottom of Screen: 115. ft

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	26.	4423.	0.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: OW-1

X Location: 132. ft
Y Location: 132. ft

Radial distance from PW-1: 186.6761902 ft

Partially Penetrating Well
Depth to Top of Screen: 45. ft
Depth to Bottom of Screen: 115. ft

No. of Observations: 2831

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2.	0.	2834.	0.168
4.	-0.006	2836.	0.168
6.	-0.006	2838.	0.158
8.	0.	2840.	0.168
10.	0.007	2842.	0.168
12.	0.007	2844.	0.168
14.	0.017	2846.	0.168
16.	0.017	2848.	0.168

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
18.	0.023	2850.	0.168
20.	0.023	2852.	0.174
22.	0.03	2854.	0.168
24.	0.04	2856.	0.174
26.	0.03	2858.	0.168
28.	0.04	2860.	0.174
30.	0.043	2862.	0.174
32.	0.046	2864.	0.174
34.	0.053	2866.	0.168
36.	0.053	2868.	0.174
38.	0.06	2870.	0.174
40.	0.06	2872.	0.174
42.	0.053	2874.	0.174
44.	0.066	2876.	0.174
46.	0.066	2878.	0.174
48.	0.076	2880.	0.174
50.	0.076	2882.	0.174
52.	0.076	2884.	0.174
54.	0.066	2886.	0.174
56.	0.076	2888.	0.174
58.	0.076	2890.	0.174
60.	0.076	2892.	0.174
62.	0.083	2894.	0.168
64.	0.083	2896.	0.174
66.	0.076	2898.	52.93
68.	0.083	2900.	52.93
70.	0.083	2902.	52.93
72.	0.089	2904.	52.93
74.	0.089	2906.	52.93
76.	0.083	2908.	0.158
78.	0.089	2910.	0.184
80.	0.089	2912.	0.184
82.	0.089	2914.	0.184
84.	0.089	2916.	0.171
86.	0.089	2918.	0.184
88.	0.099	2920.	0.181
90.	0.089	2922.	0.171
92.	0.089	2924.	0.174
94.	0.089	2926.	0.181
96.	0.099	2928.	0.174
98.	0.099	2930.	0.181
100.	0.099	2932.	0.181
102.	0.099	2934.	0.181
104.	0.099	2936.	0.174
106.	0.105	2938.	0.174
108.	0.099	2940.	0.174
110.	0.105	2942.	0.174
112.	0.105	2944.	0.165
114.	0.105	2946.	0.174
116.	0.105	2948.	0.174
118.	0.099	2950.	0.174
120.	0.105	2952.	0.174
122.	0.109	2954.	0.174
124.	0.099	2956.	0.174
126.	0.115	2958.	0.181
128.	0.112	2960.	0.174
130.	0.115	2962.	0.174
132.	0.115	2964.	0.181
134.	0.112	2966.	0.174
136.	0.115	2968.	0.165
138.	0.115	2970.	0.174
140.	0.112	2972.	0.174
142.	0.125	2974.	0.174
144.	0.125	2976.	0.174
146.	0.112	2978.	0.174
148.	0.109	2980.	0.174

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
150.	0.115	2982.	0.181
152.	0.122	2984.	0.181
154.	0.125	2986.	0.181
156.	0.125	2988.	0.181
158.	0.112	2990.	0.174
160.	0.125	2992.	0.187
162.	0.115	2994.	0.181
164.	0.112	2996.	0.181
166.	0.125	2998.	0.181
168.	0.122	3000.	0.181
170.	0.112	3002.	0.181
172.	0.115	3004.	0.181
174.	0.112	3006.	0.181
176.	0.125	3008.	0.174
178.	0.115	3010.	0.174
180.	0.112	3012.	0.181
182.	0.112	3014.	0.174
184.	0.122	3016.	0.181
186.	20.88	3018.	0.181
188.	21.12	3020.	0.181
190.	21.34	3022.	0.174
192.	21.3	3024.	0.181
194.	21.31	3026.	0.181
196.	21.31	3028.	0.181
198.	21.32	3030.	0.181
200.	21.33	3032.	0.181
202.	21.33	3034.	0.181
204.	21.34	3036.	0.187
206.	21.34	3038.	0.181
208.	21.34	3040.	0.181
210.	21.25	3042.	0.181
212.	21.07	3044.	0.181
214.	20.9	3046.	0.174
216.	0.171	3048.	0.181
218.	0.171	3050.	0.174
220.	0.171	3052.	0.174
222.	0.122	3054.	0.174
224.	0.122	3056.	0.181
226.	0.128	3058.	0.181
228.	0.128	3060.	0.181
230.	0.128	3062.	0.187
232.	0.122	3064.	0.174
234.	0.128	3066.	0.181
236.	0.122	3068.	0.181
238.	0.122	3070.	0.187
240.	0.122	3072.	0.181
242.	0.122	3074.	0.181
244.	0.122	3076.	0.181
246.	0.122	3078.	0.181
248.	0.122	3080.	0.174
250.	0.122	3082.	0.181
252.	0.122	3084.	0.174
254.	0.122	3086.	0.181
256.	0.119	3088.	0.181
258.	0.125	3090.	0.181
260.	0.115	3092.	0.187
262.	0.122	3094.	0.187
264.	0.128	3096.	0.187
266.	0.122	3098.	0.181
268.	0.122	3100.	0.181
270.	0.122	3102.	0.187
272.	0.122	3104.	0.181
274.	0.122	3106.	0.181
276.	0.128	3108.	0.181
278.	0.128	3110.	0.181
280.	0.122	3112.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
282.	0.122	3114.	0.181
284.	0.122	3116.	0.181
286.	0.122	3118.	0.181
288.	0.122	3120.	0.181
290.	0.122	3122.	0.187
292.	0.115	3124.	0.174
294.	0.122	3126.	0.181
296.	0.122	3128.	0.181
298.	0.122	3130.	0.187
300.	0.122	3132.	0.181
302.	0.128	3134.	0.174
304.	0.128	3136.	0.181
306.	0.115	3138.	0.181
308.	0.128	3140.	0.187
310.	0.122	3142.	0.187
312.	0.122	3144.	0.187
314.	0.122	3146.	0.187
316.	0.122	3148.	0.181
318.	0.115	3150.	0.181
320.	0.122	3152.	0.181
322.	0.122	3154.	0.187
324.	0.128	3156.	0.187
326.	0.128	3158.	0.187
328.	0.128	3160.	0.181
330.	0.128	3162.	0.181
332.	0.122	3164.	0.187
334.	0.122	3166.	0.181
336.	0.128	3168.	0.181
338.	0.128	3170.	0.181
340.	0.128	3172.	0.174
342.	0.128	3174.	0.187
344.	0.128	3176.	0.181
346.	0.122	3178.	0.187
348.	0.122	3180.	0.181
350.	0.122	3182.	0.187
352.	0.128	3184.	0.181
354.	0.128	3186.	0.187
356.	0.138	3188.	0.187
358.	0.128	3190.	0.187
360.	0.138	3192.	0.181
362.	0.128	3194.	0.181
364.	0.128	3196.	0.187
366.	0.128	3198.	0.181
368.	0.128	3200.	0.181
370.	0.128	3202.	0.187
372.	0.128	3204.	0.181
374.	0.128	3206.	0.181
376.	0.138	3208.	0.181
378.	0.128	3210.	0.174
380.	0.128	3212.	0.187
382.	0.138	3214.	0.187
384.	0.138	3216.	0.187
386.	0.128	3218.	0.187
388.	0.128	3220.	0.181
390.	0.128	3222.	0.181
392.	0.128	3224.	0.181
394.	0.128	3226.	0.181
396.	0.128	3228.	0.187
398.	0.128	3230.	0.174
400.	0.128	3232.	0.181
402.	0.138	3234.	0.181
404.	0.128	3236.	0.187
406.	0.128	3238.	0.181
408.	0.128	3240.	0.187
410.	0.122	3242.	0.181
412.	0.128	3244.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
414.	0.128	3246.	0.174
416.	0.128	3248.	0.181
418.	0.122	3250.	0.181
420.	0.122	3252.	0.181
422.	0.128	3254.	0.181
424.	0.128	3256.	0.187
426.	0.138	3258.	0.174
428.	0.128	3260.	0.174
430.	0.128	3262.	0.174
432.	0.128	3264.	0.174
434.	0.128	3266.	0.181
436.	0.128	3268.	0.181
438.	0.138	3270.	0.181
440.	0.128	3272.	0.181
442.	0.128	3274.	0.181
444.	0.128	3276.	0.181
446.	0.138	3278.	0.181
448.	0.138	3280.	0.174
450.	21.06	3282.	0.181
452.	21.17	3284.	0.174
454.	21.37	3286.	0.181
456.	21.41	3288.	0.181
458.	21.43	3290.	0.181
460.	21.42	3292.	0.174
462.	21.41	3294.	0.174
464.	21.42	3296.	0.181
466.	21.42	3298.	0.181
468.	21.41	3300.	0.181
470.	21.42	3302.	0.174
472.	21.42	3304.	0.181
474.	21.39	3306.	0.181
476.	21.13	3308.	0.181
478.	0.171	3310.	0.181
480.	0.158	3312.	0.181
482.	0.155	3314.	0.174
484.	0.142	3316.	0.181
486.	0.142	3318.	0.181
488.	0.135	3320.	0.174
490.	0.138	3322.	0.181
492.	0.138	3324.	0.174
494.	0.138	3326.	0.174
496.	0.138	3328.	0.174
498.	0.138	3330.	0.174
500.	0.138	3332.	0.174
502.	0.128	3334.	0.174
504.	0.122	3336.	0.187
506.	0.128	3338.	0.181
508.	0.128	3340.	0.174
510.	0.128	3342.	0.174
512.	0.128	3344.	0.181
514.	0.122	3346.	0.181
516.	0.128	3348.	0.174
518.	0.128	3350.	0.181
520.	0.128	3352.	0.181
522.	0.128	3354.	0.181
524.	0.128	3356.	0.181
526.	0.122	3358.	0.174
528.	0.122	3360.	0.174
530.	0.128	3362.	0.174
532.	0.122	3364.	0.174
534.	0.122	3366.	0.174
536.	0.122	3368.	0.174
538.	0.128	3370.	0.181
540.	0.128	3372.	0.181
542.	0.122	3374.	0.174
544.	0.122	3376.	0.181

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
546.	0.122	3378.	0.181
548.	0.128	3380.	0.184
550.	0.122	3382.	0.181
552.	0.128	3384.	0.187
554.	0.122	3386.	0.181
556.	0.122	3388.	0.181
558.	0.122	3390.	0.187
560.	0.128	3392.	0.174
562.	0.128	3394.	0.181
564.	0.122	3396.	0.174
566.	0.128	3398.	0.174
568.	0.122	3400.	0.174
570.	0.128	3402.	0.174
572.	0.128	3404.	0.181
574.	0.135	3406.	0.174
576.	0.128	3408.	0.181
578.	0.128	3410.	0.174
580.	0.135	3412.	0.181
582.	0.128	3414.	0.187
584.	0.128	3416.	0.174
586.	0.135	3418.	0.181
588.	0.128	3420.	0.181
590.	0.128	3422.	0.181
592.	0.142	3424.	0.181
594.	0.128	3426.	0.174
596.	0.128	3428.	0.181
598.	0.128	3430.	0.181
600.	0.128	3432.	0.174
602.	0.128	3434.	0.181
604.	0.142	3436.	0.181
606.	0.135	3438.	0.174
608.	0.128	3440.	0.181
610.	0.128	3442.	0.174
612.	0.128	3444.	0.181
614.	0.135	3446.	0.174
616.	0.128	3448.	0.181
618.	0.128	3450.	0.181
620.	0.128	3452.	0.181
622.	0.135	3454.	0.174
624.	0.128	3456.	0.181
626.	0.135	3458.	0.187
628.	0.128	3460.	0.181
630.	0.135	3462.	0.181
632.	0.128	3464.	0.181
634.	0.135	3466.	0.174
636.	0.142	3468.	0.174
638.	0.128	3470.	0.181
640.	0.135	3472.	0.181
642.	0.135	3474.	0.181
644.	0.128	3476.	0.174
646.	0.128	3478.	0.174
648.	0.135	3480.	0.181
650.	0.135	3482.	0.181
652.	0.135	3484.	0.181
654.	0.135	3486.	0.181
656.	0.135	3488.	0.181
658.	0.135	3490.	0.181
660.	0.135	3492.	0.181
662.	0.135	3494.	0.181
664.	0.128	3496.	0.181
666.	0.135	3498.	0.181
668.	0.135	3500.	0.187
670.	0.135	3502.	0.181
672.	0.135	3504.	0.181
674.	0.128	3506.	0.187
676.	0.135	3508.	0.174

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
678.	0.142	3510.	0.174
680.	0.135	3512.	0.187
682.	0.128	3514.	0.181
684.	0.135	3516.	0.181
686.	0.135	3518.	0.181
688.	0.135	3520.	0.181
690.	0.135	3522.	0.181
692.	0.135	3524.	0.181
694.	0.135	3526.	0.181
696.	0.135	3528.	0.181
698.	0.135	3530.	0.181
700.	0.142	3532.	0.181
702.	0.135	3534.	0.187
704.	0.135	3536.	0.181
706.	0.135	3538.	0.174
708.	0.135	3540.	0.181
710.	0.135	3542.	0.181
712.	0.135	3544.	0.181
714.	0.142	3546.	0.181
716.	0.135	3548.	0.187
718.	0.135	3550.	0.181
720.	0.128	3552.	0.181
722.	0.128	3554.	0.174
724.	0.128	3556.	0.181
726.	0.128	3558.	0.181
728.	0.135	3560.	0.181
730.	0.128	3562.	0.187
732.	0.128	3564.	0.187
734.	0.135	3566.	0.187
736.	0.135	3568.	0.187
738.	0.128	3570.	0.181
740.	0.135	3572.	0.181
742.	0.128	3574.	0.174
744.	0.128	3576.	0.187
746.	0.128	3578.	0.181
748.	0.128	3580.	0.187
750.	0.128	3582.	0.181
752.	0.128	3584.	0.187
754.	0.128	3586.	0.187
756.	0.135	3588.	0.187
758.	0.135	3590.	0.187
760.	0.142	3592.	0.181
762.	0.135	3594.	0.187
764.	0.128	3596.	0.181
766.	0.135	3598.	0.181
768.	0.142	3600.	0.181
770.	0.135	3602.	0.187
772.	0.135	3604.	0.187
774.	0.135	3606.	0.181
776.	0.135	3608.	0.181
778.	0.135	3610.	0.187
780.	0.135	3612.	0.187
782.	0.135	3614.	0.187
784.	0.135	3616.	0.181
786.	0.142	3618.	0.187
788.	0.142	3620.	0.187
790.	0.142	3622.	0.197
792.	0.142	3624.	0.197
794.	0.142	3626.	0.197
796.	0.135	3628.	0.187
798.	0.142	3630.	0.197
800.	0.142	3632.	0.187
802.	0.142	3634.	0.187
804.	0.142	3636.	0.197
806.	0.135	3638.	0.187
808.	0.151	3640.	0.187

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
810.	0.135	3642.	0.187
812.	0.142	3644.	0.187
814.	0.142	3646.	0.197
816.	0.142	3648.	0.197
818.	0.142	3650.	0.197
820.	0.142	3652.	0.187
822.	0.142	3654.	0.197
824.	0.142	3656.	0.187
826.	0.142	3658.	0.187
828.	0.135	3660.	0.184
830.	0.135	3662.	0.187
832.	0.142	3664.	0.194
834.	0.142	3666.	0.194
836.	0.135	3668.	0.201
838.	0.142	3670.	0.187
840.	0.142	3672.	0.197
842.	0.142	3674.	0.204
844.	0.142	3676.	0.187
846.	0.142	3678.	0.197
848.	0.142	3680.	0.197
850.	0.151	3682.	0.197
852.	0.142	3684.	0.197
854.	0.142	3686.	0.197
856.	0.135	3688.	0.197
858.	0.135	3690.	0.187
860.	0.151	3692.	0.204
862.	0.135	3694.	0.197
864.	0.135	3696.	0.197
866.	0.135	3698.	0.197
868.	0.142	3700.	0.197
870.	0.151	3702.	0.197
872.	0.142	3704.	0.204
874.	0.142	3706.	0.204
876.	0.142	3708.	0.204
878.	0.151	3710.	0.204
880.	0.135	3712.	0.204
882.	0.151	3714.	0.204
884.	0.142	3716.	0.204
886.	0.142	3718.	0.197
888.	0.142	3720.	0.197
890.	0.135	3722.	0.197
892.	0.142	3724.	0.204
894.	0.142	3726.	0.204
896.	0.151	3728.	0.204
898.	0.142	3730.	0.197
900.	0.142	3732.	0.204
902.	0.151	3734.	0.187
904.	0.142	3736.	0.197
906.	0.142	3738.	0.184
908.	0.142	3740.	0.197
910.	0.142	3742.	0.197
912.	0.142	3744.	0.194
914.	0.142	3746.	0.194
916.	0.135	3748.	0.201
918.	0.135	3750.	0.197
920.	0.142	3752.	0.197
922.	0.135	3754.	0.197
924.	0.142	3756.	0.201
926.	0.135	3758.	0.204
928.	0.142	3760.	0.194
930.	0.142	3762.	0.204
932.	0.142	3764.	0.204
934.	0.142	3766.	0.204
936.	0.151	3768.	0.204
938.	0.142	3770.	0.201
940.	0.142	3772.	0.201

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
942.	0.142	3774.	0.201
944.	0.142	3776.	0.194
946.	0.142	3778.	0.204
948.	0.151	3780.	0.204
950.	0.142	3782.	0.197
952.	0.142	3784.	0.197
954.	0.135	3786.	0.204
956.	0.142	3788.	0.197
958.	0.135	3790.	0.204
960.	0.142	3792.	0.204
962.	0.142	3794.	0.204
964.	0.135	3796.	0.204
966.	0.135	3798.	0.204
968.	0.142	3800.	0.187
970.	0.142	3802.	0.197
972.	0.142	3804.	0.204
974.	0.142	3806.	0.197
976.	0.142	3808.	0.197
978.	0.142	3810.	0.204
980.	0.142	3812.	0.197
982.	0.142	3814.	0.197
984.	0.135	3816.	0.197
986.	0.142	3818.	0.197
988.	0.135	3820.	0.197
990.	0.135	3822.	0.197
992.	0.135	3824.	0.197
994.	0.135	3826.	0.187
996.	0.135	3828.	0.197
998.	0.142	3830.	0.197
1000.	0.135	3832.	0.204
1002.	0.135	3834.	0.204
1004.	0.135	3836.	0.204
1006.	0.135	3838.	0.21
1008.	0.142	3840.	0.204
1010.	0.135	3842.	0.204
1012.	0.135	3844.	0.201
1014.	0.135	3846.	0.197
1016.	0.135	3848.	0.201
1018.	0.135	3850.	0.201
1020.	0.135	3852.	0.204
1022.	0.135	3854.	0.197
1024.	0.135	3856.	0.197
1026.	0.142	3858.	0.204
1028.	0.135	3860.	0.197
1030.	0.135	3862.	0.194
1032.	0.142	3864.	0.197
1034.	0.142	3866.	0.204
1036.	0.142	3868.	0.184
1038.	0.142	3870.	0.197
1040.	0.142	3872.	0.197
1042.	0.142	3874.	0.197
1044.	0.135	3876.	0.197
1046.	0.142	3878.	0.204
1048.	0.142	3880.	0.204
1050.	0.142	3882.	0.194
1052.	0.135	3884.	0.194
1054.	0.135	3886.	0.197
1056.	0.135	3888.	0.194
1058.	0.135	3890.	0.197
1060.	0.135	3892.	0.197
1062.	0.135	3894.	0.197
1064.	0.142	3896.	0.204
1066.	0.135	3898.	0.194
1068.	0.135	3900.	0.194
1070.	0.128	3902.	0.194
1072.	0.135	3904.	0.201

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1074.	0.135	3906.	0.194
1076.	0.135	3908.	0.194
1078.	0.135	3910.	0.201
1080.	0.135	3912.	0.201
1082.	0.135	3914.	0.194
1084.	0.142	3916.	0.194
1086.	0.135	3918.	0.194
1088.	0.135	3920.	0.194
1090.	0.128	3922.	0.194
1092.	0.135	3924.	0.194
1094.	0.135	3926.	0.194
1096.	0.135	3928.	0.201
1098.	0.135	3930.	0.194
1100.	0.128	3932.	0.194
1102.	0.128	3934.	0.194
1104.	0.128	3936.	0.197
1106.	0.135	3938.	0.197
1108.	0.142	3940.	0.204
1110.	0.135	3942.	0.21
1112.	0.135	3944.	0.197
1114.	0.142	3946.	0.184
1116.	0.135	3948.	0.184
1118.	0.142	3950.	0.201
1120.	0.135	3952.	0.194
1122.	0.135	3954.	0.194
1124.	0.135	3956.	0.194
1126.	0.135	3958.	0.194
1128.	0.142	3960.	0.194
1130.	0.142	3962.	0.194
1132.	0.135	3964.	0.197
1134.	0.135	3966.	0.194
1136.	0.142	3968.	0.197
1138.	0.135	3970.	0.194
1140.	0.135	3972.	0.194
1142.	0.142	3974.	0.194
1144.	0.135	3976.	0.184
1146.	0.135	3978.	0.204
1148.	0.135	3980.	0.194
1150.	0.142	3982.	0.197
1152.	0.135	3984.	0.187
1154.	0.142	3986.	0.187
1156.	0.142	3988.	0.194
1158.	0.142	3990.	0.187
1160.	0.142	3992.	0.187
1162.	0.142	3994.	0.194
1164.	0.142	3996.	0.201
1166.	0.142	3998.	0.194
1168.	0.142	4000.	0.197
1170.	0.135	4002.	0.184
1172.	0.142	4004.	0.194
1174.	0.142	4006.	0.194
1176.	0.142	4008.	0.184
1178.	0.142	4010.	0.194
1180.	0.142	4012.	0.194
1182.	0.142	4014.	0.194
1184.	0.135	4016.	0.194
1186.	0.135	4018.	0.184
1188.	0.142	4020.	0.194
1190.	0.142	4022.	0.184
1192.	0.142	4024.	0.194
1194.	0.142	4026.	0.184
1196.	0.142	4028.	0.194
1198.	0.142	4030.	0.187
1200.	0.135	4032.	0.184
1202.	0.135	4034.	0.194
1204.	0.142	4036.	0.178

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1206.	0.142	4038.	0.178
1208.	0.151	4040.	0.184
1210.	0.142	4042.	0.184
1212.	0.135	4044.	0.187
1214.	0.135	4046.	0.184
1216.	0.142	4048.	0.184
1218.	0.142	4050.	0.184
1220.	0.142	4052.	0.184
1222.	0.142	4054.	0.187
1224.	0.142	4056.	0.184
1226.	0.142	4058.	0.184
1228.	0.135	4060.	0.194
1230.	0.142	4062.	0.197
1232.	0.142	4064.	0.194
1234.	0.142	4066.	0.187
1236.	0.142	4068.	0.178
1238.	0.142	4070.	0.197
1240.	0.142	4072.	0.194
1242.	0.142	4074.	0.184
1244.	0.135	4076.	0.197
1246.	0.135	4078.	0.184
1248.	0.142	4080.	0.184
1250.	0.135	4082.	0.194
1252.	0.135	4084.	0.194
1254.	0.135	4086.	0.184
1256.	0.135	4088.	0.184
1258.	0.135	4090.	0.187
1260.	0.135	4092.	0.184
1262.	0.148	4094.	0.184
1264.	0.135	4096.	0.184
1266.	0.135	4098.	0.184
1268.	0.135	4100.	0.194
1270.	0.135	4102.	0.194
1272.	0.135	4104.	0.184
1274.	0.142	4106.	0.178
1276.	0.135	4108.	0.184
1278.	0.142	4110.	0.194
1280.	0.142	4112.	0.184
1282.	0.142	4114.	0.184
1284.	0.142	4116.	0.184
1286.	0.142	4118.	0.178
1288.	0.142	4120.	0.184
1290.	0.142	4122.	0.184
1292.	0.135	4124.	0.184
1294.	0.135	4126.	0.184
1296.	0.135	4128.	0.184
1298.	0.135	4130.	0.187
1300.	0.142	4132.	0.184
1302.	0.142	4134.	0.184
1304.	0.142	4136.	0.184
1306.	0.142	4138.	0.184
1308.	0.142	4140.	0.184
1310.	0.135	4142.	0.194
1312.	0.148	4144.	0.184
1314.	0.142	4146.	0.184
1316.	0.142	4148.	0.184
1318.	0.148	4150.	0.184
1320.	0.142	4152.	0.197
1322.	0.142	4154.	0.184
1324.	0.142	4156.	0.184
1326.	0.142	4158.	0.184
1328.	0.142	4160.	0.184
1330.	0.142	4162.	0.187
1332.	0.151	4164.	0.187
1334.	0.151	4166.	0.184
1336.	0.142	4168.	0.187

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1338.	0.151	4170.	0.187
1340.	0.142	4172.	0.187
1342.	0.135	4174.	0.187
1344.	0.142	4176.	0.187
1346.	0.142	4178.	0.187
1348.	0.142	4180.	0.187
1350.	0.142	4182.	0.184
1352.	0.142	4184.	0.184
1354.	0.151	4186.	0.184
1356.	0.151	4188.	0.184
1358.	0.151	4190.	0.184
1360.	0.151	4192.	0.187
1362.	0.151	4194.	0.184
1364.	0.151	4196.	0.178
1366.	0.151	4198.	0.184
1368.	0.151	4200.	0.184
1370.	0.151	4202.	0.178
1372.	0.142	4204.	0.184
1374.	0.142	4206.	0.178
1376.	0.151	4208.	0.184
1378.	0.142	4210.	0.184
1380.	0.148	4212.	0.184
1382.	0.142	4214.	0.184
1384.	0.151	4216.	0.178
1386.	0.142	4218.	0.184
1388.	0.155	4220.	0.184
1390.	0.148	4222.	0.184
1392.	0.151	4224.	0.178
1394.	0.142	4226.	0.184
1396.	0.128	4228.	0.184
1398.	0.142	4230.	0.184
1400.	0.598	4232.	0.184
1402.	0.174	4234.	0.184
1404.	4.813	4236.	0.194
1406.	21.01	4238.	0.194
1408.	21.24	4240.	0.194
1410.	21.25	4242.	0.194
1412.	21.23	4244.	0.194
1414.	21.23	4246.	0.194
1416.	21.23	4248.	0.194
1418.	21.23	4250.	0.184
1420.	21.24	4252.	0.201
1422.	21.24	4254.	0.194
1424.	21.25	4256.	0.194
1426.	21.24	4258.	0.194
1428.	21.25	4260.	0.194
1430.	21.25	4262.	0.194
1432.	21.25	4264.	0.194
1434.	21.25	4266.	0.194
1436.	21.24	4268.	0.194
1438.	21.25	4270.	0.194
1440.	21.24	4272.	0.184
1442.	21.25	4274.	0.194
1444.	21.24	4276.	0.201
1446.	21.13	4278.	0.201
1448.	20.88	4280.	0.194
1450.	17.28	4282.	0.184
1452.	0.161	4284.	0.194
1454.	0.158	4286.	0.201
1456.	0.158	4288.	0.201
1458.	0.151	4290.	0.194
1460.	0.145	4292.	0.194
1462.	0.158	4294.	0.201
1464.	0.151	4296.	0.201
1466.	0.145	4298.	0.194
1468.	0.142	4300.	0.194

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1470.	0.151	4302.	0.194
1472.	0.142	4304.	0.194
1474.	0.142	4306.	0.201
1476.	0.142	4308.	0.201
1478.	0.142	4310.	0.194
1480.	0.142	4312.	0.194
1482.	0.148	4314.	0.201
1484.	0.142	4316.	0.194
1486.	0.142	4318.	0.201
1488.	0.142	4320.	0.194
1490.	0.142	4322.	0.201
1492.	0.142	4324.	0.201
1494.	0.142	4326.	0.201
1496.	0.142	4328.	0.207
1498.	0.142	4330.	0.201
1500.	0.142	4332.	0.201
1502.	0.142	4334.	0.201
1504.	0.148	4336.	0.204
1506.	0.142	4338.	0.207
1508.	0.142	4340.	0.201
1510.	0.142	4342.	0.201
1512.	0.148	4344.	0.194
1514.	0.151	4346.	0.194
1516.	0.142	4348.	0.204
1518.	0.142	4350.	0.204
1520.	0.142	4352.	0.201
1522.	0.142	4354.	0.201
1524.	0.142	4356.	0.201
1526.	0.142	4358.	0.201
1528.	0.135	4360.	52.93
1530.	0.135	4362.	52.93
1532.	0.135	4364.	52.93
1534.	0.142	4366.	52.93
1536.	0.142	4368.	52.93
1538.	0.142	4370.	52.93
1540.	0.142	4372.	52.93
1542.	0.142	4374.	52.93
1544.	0.135	4376.	52.93
1546.	0.142	4378.	52.93
1548.	0.135	4380.	52.93
1550.	0.145	4382.	52.93
1552.	0.142	4384.	52.93
1554.	0.138	4386.	52.93
1556.	0.135	4388.	52.93
1558.	0.138	4390.	52.93
1560.	0.135	4392.	0.201
1562.	0.142	4394.	0.21
1564.	0.135	4396.	0.21
1566.	0.142	4398.	0.217
1568.	0.142	4400.	0.204
1570.	0.142	4402.	0.204
1572.	0.142	4404.	0.201
1574.	0.142	4406.	0.21
1576.	0.151	4408.	0.21
1578.	0.142	4410.	0.201
1580.	0.142	4412.	0.21
1582.	0.135	4414.	0.201
1584.	0.142	4416.	0.201
1586.	0.142	4418.	0.201
1588.	0.145	4420.	0.201
1590.	0.142	4422.	0.201
1592.	0.138	4423.	0.201
1594.	0.142	4424.	0.21
1596.	0.142	4425.	0.197
1598.	0.142	4426.	0.201
1600.	0.148	4427.	0.201

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1602.	0.142	4428.	0.187
1604.	0.142	4429.	0.187
1606.	0.142	4430.	0.187
1608.	0.142	4431.	0.181
1610.	0.142	4432.	0.174
1612.	0.145	4433.	0.165
1614.	0.145	4434.	0.174
1616.	0.148	4435.	0.165
1618.	0.142	4436.	0.165
1620.	0.142	4437.	0.158
1622.	0.148	4438.	0.151
1624.	0.148	4439.	0.151
1626.	0.142	4440.	0.142
1628.	0.148	4441.	0.142
1630.	0.142	4442.	0.142
1632.	0.145	4443.	0.142
1634.	0.151	4444.	0.142
1636.	0.145	4445.	0.135
1638.	0.145	4446.	0.142
1640.	0.145	4447.	0.135
1642.	0.145	4448.	0.135
1644.	0.145	4449.	0.135
1646.	0.145	4450.	0.135
1648.	0.151	4451.	0.128
1650.	0.145	4452.	0.128
1652.	0.151	4453.	0.128
1654.	0.151	4454.	0.128
1656.	0.145	4455.	0.128
1658.	0.145	4456.	0.128
1660.	0.145	4457.	0.128
1662.	0.145	4458.	0.128
1664.	0.151	4459.	0.128
1666.	0.145	4460.	0.128
1668.	0.151	4461.	0.128
1670.	0.151	4462.	0.122
1672.	0.145	4463.	0.122
1674.	0.145	4464.	0.128
1676.	0.145	4465.	0.128
1678.	0.151	4466.	0.112
1680.	0.151	4467.	0.112
1682.	0.142	4468.	0.122
1684.	0.145	4469.	0.122
1686.	0.151	4470.	0.122
1688.	0.145	4471.	0.122
1690.	0.145	4472.	0.122
1692.	0.148	4473.	0.122
1694.	0.145	4474.	0.105
1696.	0.145	4475.	0.112
1698.	0.145	4476.	0.112
1700.	0.138	4477.	0.112
1702.	0.145	4478.	0.112
1704.	0.151	4479.	0.112
1706.	0.151	4480.	0.112
1708.	0.138	4481.	0.105
1710.	0.145	4482.	0.112
1712.	0.151	4483.	0.122
1714.	0.151	4484.	0.112
1716.	0.142	4485.	0.112
1718.	0.148	4486.	0.112
1720.	0.145	4487.	0.122
1722.	0.148	4488.	0.112
1724.	0.151	4489.	0.122
1726.	0.151	4490.	0.112
1728.	0.138	4491.	0.112
1730.	0.138	4492.	0.105
1732.	0.145	4493.	0.105

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1734.	0.145	4494.	0.112
1736.	0.142	4495.	0.112
1738.	0.151	4496.	0.105
1740.	0.145	4497.	0.112
1742.	0.145	4498.	0.105
1744.	0.145	4499.	0.112
1746.	0.145	4500.	0.105
1748.	0.145	4501.	0.112
1750.	0.138	4502.	0.112
1752.	0.145	4503.	0.112
1754.	0.145	4504.	0.105
1756.	0.138	4505.	0.112
1758.	0.145	4506.	0.105
1760.	0.138	4507.	0.105
1762.	0.151	4508.	0.105
1764.	0.145	4509.	0.112
1766.	0.145	4510.	0.112
1768.	0.138	4511.	0.105
1770.	0.145	4512.	0.112
1772.	0.145	4513.	0.105
1774.	0.138	4514.	0.099
1776.	0.145	4515.	0.105
1778.	0.145	4516.	0.105
1780.	0.151	4517.	0.105
1782.	0.145	4518.	0.105
1784.	0.138	4519.	0.105
1786.	0.138	4520.	0.099
1788.	0.138	4521.	0.105
1790.	0.138	4522.	0.099
1792.	0.145	4523.	0.105
1794.	0.145	4524.	0.105
1796.	0.151	4525.	0.109
1798.	0.138	4526.	0.105
1800.	0.145	4527.	0.105
1802.	0.135	4528.	0.105
1804.	0.145	4529.	0.105
1806.	0.145	4530.	0.105
1808.	0.145	4531.	0.099
1810.	0.145	4532.	0.099
1812.	0.138	4533.	0.099
1814.	0.142	4534.	0.099
1816.	0.148	4535.	0.099
1818.	0.142	4536.	0.105
1820.	0.142	4537.	0.099
1822.	0.142	4538.	0.105
1824.	0.135	4539.	0.099
1826.	0.135	4540.	0.099
1828.	0.135	4541.	0.099
1830.	0.142	4542.	0.099
1832.	0.135	4543.	0.099
1834.	0.142	4544.	0.099
1836.	0.142	4545.	0.099
1838.	0.142	4546.	0.099
1840.	0.142	4547.	0.089
1842.	0.138	4548.	0.099
1844.	0.145	4549.	0.099
1846.	0.145	4550.	0.089
1848.	0.142	4551.	0.096
1850.	0.145	4552.	0.089
1852.	0.145	4553.	0.099
1854.	0.145	4554.	0.102
1856.	0.138	4555.	0.099
1858.	0.138	4556.	0.089
1860.	0.145	4557.	0.089
1862.	0.142	4558.	0.089
1864.	0.145	4559.	0.083

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1866.	0.138	4560.	0.099
1868.	0.145	4561.	0.089
1870.	0.145	4562.	0.083
1872.	0.138	4563.	0.089
1874.	0.138	4564.	0.089
1876.	0.138	4565.	0.089
1878.	0.132	4566.	0.083
1880.	0.132	4567.	0.089
1882.	0.138	4568.	0.089
1884.	0.138	4569.	0.076
1886.	0.138	4570.	0.083
1888.	0.138	4571.	0.083
1890.	0.145	4572.	0.076
1892.	0.138	4573.	0.083
1894.	0.145	4574.	0.083
1896.	0.138	4575.	0.083
1898.	0.132	4576.	0.089
1900.	0.138	4577.	0.083
1902.	0.145	4578.	0.083
1904.	0.142	4579.	0.096
1906.	0.142	4580.	0.089
1908.	0.135	4581.	0.089
1910.	0.135	4582.	0.083
1912.	0.132	4583.	0.089
1914.	0.135	4584.	0.083
1916.	0.125	4585.	0.099
1918.	0.135	4586.	0.083
1920.	0.138	4587.	0.083
1922.	0.142	4588.	0.083
1924.	0.135	4589.	0.076
1926.	0.135	4590.	0.083
1928.	0.135	4591.	0.083
1930.	0.135	4592.	0.083
1932.	0.135	4593.	0.076
1934.	0.135	4594.	0.076
1936.	0.135	4595.	0.083
1938.	0.135	4596.	0.083
1940.	0.135	4597.	0.083
1942.	0.145	4598.	0.083
1944.	0.138	4599.	0.083
1946.	0.138	4600.	0.083
1948.	0.138	4601.	0.076
1950.	0.138	4602.	0.083
1952.	0.138	4603.	0.083
1954.	0.138	4604.	0.083
1956.	0.138	4605.	0.086
1958.	0.132	4606.	0.086
1960.	0.138	4607.	0.089
1962.	0.145	4608.	0.083
1964.	0.151	4609.	0.076
1966.	0.138	4610.	0.083
1968.	0.138	4611.	0.076
1970.	0.138	4612.	0.076
1972.	0.132	4613.	0.079
1974.	0.138	4614.	0.076
1976.	0.138	4615.	0.076
1978.	0.138	4616.	0.076
1980.	0.132	4617.	0.083
1982.	0.135	4618.	0.083
1984.	0.132	4619.	0.076
1986.	0.145	4620.	0.076
1988.	0.135	4621.	0.076
1990.	0.138	4622.	0.083
1992.	0.145	4623.	0.083
1994.	0.145	4624.	0.083
1996.	0.135	4625.	0.083

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1998.	0.135	4626.	0.076
2000.	0.132	4627.	0.076
2002.	0.138	4628.	0.076
2004.	0.145	4629.	0.066
2006.	0.125	4630.	0.083
2008.	0.145	4631.	0.076
2010.	0.142	4632.	0.076
2012.	0.135	4633.	0.076
2014.	0.142	4634.	0.076
2016.	0.135	4635.	0.076
2018.	0.135	4636.	0.076
2020.	0.138	4637.	0.076
2022.	0.135	4638.	0.076
2024.	0.135	4639.	0.083
2026.	0.138	4640.	0.076
2028.	0.145	4641.	0.076
2030.	0.138	4642.	0.076
2032.	0.138	4643.	0.066
2034.	0.138	4644.	0.076
2036.	0.138	4645.	0.076
2038.	0.138	4646.	0.076
2040.	0.138	4647.	0.076
2042.	0.138	4648.	0.076
2044.	0.145	4649.	0.083
2046.	0.138	4650.	0.076
2048.	0.138	4651.	0.076
2050.	0.132	4652.	0.066
2052.	0.138	4653.	0.076
2054.	0.145	4654.	0.083
2056.	0.145	4655.	0.076
2058.	0.145	4656.	0.076
2060.	0.132	4657.	0.083
2062.	0.138	4658.	0.083
2064.	0.145	4659.	0.076
2066.	0.138	4660.	0.076
2068.	0.132	4661.	0.076
2070.	0.138	4662.	0.076
2072.	0.145	4663.	0.076
2074.	0.145	4664.	0.066
2076.	0.151	4665.	0.066
2078.	0.145	4666.	0.076
2080.	0.151	4667.	0.066
2082.	0.151	4668.	0.066
2084.	0.145	4669.	0.076
2086.	0.145	4670.	0.076
2088.	0.145	4671.	0.076
2090.	0.151	4672.	0.076
2092.	0.151	4673.	0.076
2094.	0.151	4674.	0.083
2096.	0.145	4675.	0.076
2098.	0.145	4676.	0.076
2100.	0.145	4677.	0.066
2102.	0.151	4678.	0.076
2104.	0.145	4679.	0.066
2106.	0.145	4680.	0.076
2108.	0.151	4681.	0.076
2110.	0.151	4682.	0.066
2112.	0.151	4683.	0.066
2114.	0.151	4684.	0.079
2116.	0.151	4685.	0.079
2118.	0.151	4686.	0.079
2120.	0.151	4687.	0.076
2122.	0.151	4688.	0.079
2124.	0.151	4689.	0.076
2126.	0.151	4690.	0.076
2128.	0.151	4691.	0.076

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2130.	0.145	4692.	0.076
2132.	0.151	4693.	0.066
2134.	0.151	4694.	0.076
2136.	0.151	4695.	0.076
2138.	0.151	4696.	0.079
2140.	0.145	4697.	0.079
2142.	0.151	4698.	0.086
2144.	0.151	4699.	0.079
2146.	0.151	4700.	0.076
2148.	0.151	4701.	0.076
2150.	0.145	4702.	0.066
2152.	0.151	4703.	0.069
2154.	0.151	4704.	0.076
2156.	0.158	4705.	0.066
2158.	0.145	4706.	0.079
2160.	0.145	4707.	0.066
2162.	0.151	4708.	0.079
2164.	0.151	4709.	0.069
2166.	0.151	4710.	0.069
2168.	0.151	4711.	0.079
2170.	0.151	4712.	0.079
2172.	0.158	4713.	0.076
2174.	0.151	4714.	0.079
2176.	0.158	4715.	0.079
2178.	0.151	4716.	0.079
2180.	0.151	4717.	0.079
2182.	0.151	4718.	0.079
2184.	0.151	4719.	0.066
2186.	0.151	4720.	0.066
2188.	0.151	4721.	0.076
2190.	0.151	4722.	0.076
2192.	0.151	4723.	0.066
2194.	0.151	4724.	0.069
2196.	0.151	4725.	0.079
2198.	0.151	4726.	0.079
2200.	0.158	4727.	0.076
2202.	0.158	4728.	0.069
2204.	0.158	4729.	0.076
2206.	0.158	4730.	0.076
2208.	0.158	4731.	0.076
2210.	0.151	4732.	0.079
2212.	0.158	4733.	0.076
2214.	0.158	4734.	0.076
2216.	0.158	4735.	0.076
2218.	0.158	4736.	0.066
2220.	0.158	4737.	0.076
2222.	0.151	4738.	0.076
2224.	0.168	4739.	0.083
2226.	0.158	4740.	0.083
2228.	0.158	4741.	0.076
2230.	0.158	4742.	0.069
2232.	0.168	4743.	0.076
2234.	0.168	4744.	0.076
2236.	0.168	4745.	0.076
2238.	0.158	4746.	0.079
2240.	0.168	4747.	0.076
2242.	0.158	4748.	0.066
2244.	0.168	4749.	0.076
2246.	0.168	4750.	0.076
2248.	0.158	4751.	0.076
2250.	0.158	4752.	0.079
2252.	0.158	4753.	0.066
2254.	0.158	4754.	0.079
2256.	0.168	4755.	0.069
2258.	0.158	4756.	0.076
2260.	0.168	4757.	0.066

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2262.	0.168	4758.	0.076
2264.	0.168	4759.	0.076
2266.	0.168	4760.	0.076
2268.	0.158	4761.	0.076
2270.	0.158	4762.	0.076
2272.	0.168	4763.	0.076
2274.	0.168	4764.	0.076
2276.	0.155	4765.	0.076
2278.	0.161	4766.	0.079
2280.	0.155	4767.	0.076
2282.	0.158	4768.	0.076
2284.	0.155	4769.	0.076
2286.	0.158	4770.	0.076
2288.	0.155	4771.	0.076
2290.	0.168	4772.	0.076
2292.	0.158	4773.	0.083
2294.	0.158	4774.	0.076
2296.	0.168	4775.	0.076
2298.	0.158	4776.	0.076
2300.	0.168	4777.	0.079
2302.	0.158	4778.	0.076
2304.	0.158	4779.	0.076
2306.	0.158	4780.	0.076
2308.	0.158	4781.	0.076
2310.	0.168	4782.	0.069
2312.	0.158	4783.	0.076
2314.	0.158	4784.	0.076
2316.	0.158	4785.	0.079
2318.	0.158	4786.	0.076
2320.	0.168	4787.	0.076
2322.	0.168	4788.	0.086
2324.	0.168	4789.	0.079
2326.	0.158	4790.	0.079
2328.	0.168	4791.	0.076
2330.	0.168	4792.	0.069
2332.	0.168	4793.	0.066
2334.	0.168	4794.	0.079
2336.	0.158	4795.	0.069
2338.	0.158	4796.	0.069
2340.	0.158	4797.	0.076
2342.	0.158	4798.	0.076
2344.	0.158	4799.	0.076
2346.	0.158	4800.	0.083
2348.	0.158	4801.	0.066
2350.	0.158	4802.	0.076
2352.	0.158	4803.	0.076
2354.	0.168	4804.	0.066
2356.	0.158	4805.	0.076
2358.	0.158	4806.	0.079
2360.	0.158	4807.	0.069
2362.	0.151	4808.	0.079
2364.	0.158	4809.	0.069
2366.	0.151	4810.	0.079
2368.	0.158	4811.	0.079
2370.	0.151	4812.	0.079
2372.	0.158	4813.	0.079
2374.	0.158	4814.	0.079
2376.	0.158	4815.	0.079
2378.	0.158	4816.	0.069
2380.	0.168	4817.	0.079
2382.	0.158	4818.	0.069
2384.	0.158	4819.	0.069
2386.	0.158	4820.	0.076
2388.	0.158	4821.	0.076
2390.	0.158	4822.	0.079
2392.	0.155	4823.	0.079

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2394.	0.168	4824.	0.076
2396.	0.158	4825.	0.069
2398.	0.158	4826.	0.069
2400.	0.158	4827.	0.066
2402.	0.168	4828.	0.079
2404.	0.151	4829.	0.069
2406.	0.151	4830.	0.079
2408.	0.158	4831.	0.069
2410.	0.158	4832.	0.079
2412.	0.168	4833.	0.079
2414.	0.158	4834.	0.069
2416.	0.151	4835.	0.069
2418.	0.158	4836.	0.076
2420.	0.158	4837.	0.069
2422.	0.151	4838.	0.079
2424.	0.151	4839.	0.066
2426.	0.158	4840.	0.076
2428.	0.158	4841.	0.066
2430.	0.168	4842.	0.069
2432.	0.158	4843.	0.066
2434.	0.158	4844.	0.076
2436.	0.158	4845.	0.076
2438.	0.158	4846.	0.066
2440.	0.158	4847.	0.066
2442.	0.151	4848.	0.076
2444.	0.151	4849.	0.083
2446.	0.158	4850.	0.079
2448.	0.151	4851.	0.066
2450.	0.158	4852.	0.076
2452.	0.158	4853.	0.066
2454.	0.158	4854.	0.066
2456.	0.151	4855.	0.076
2458.	0.158	4856.	0.076
2460.	0.158	4857.	0.066
2462.	0.158	4858.	0.079
2464.	0.158	4859.	0.066
2466.	0.151	4860.	0.066
2468.	0.158	4861.	0.063
2470.	0.158	4862.	0.069
2472.	0.151	4863.	0.069
2474.	0.158	4864.	0.069
2476.	0.158	4865.	0.069
2478.	0.158	4866.	0.066
2480.	0.151	4867.	0.069
2482.	0.158	4868.	0.06
2484.	0.151	4869.	0.069
2486.	0.158	4870.	0.066
2488.	0.158	4871.	0.069
2490.	0.151	4872.	0.079
2492.	0.158	4873.	0.069
2494.	0.151	4874.	0.063
2496.	0.158	4875.	0.063
2498.	0.151	4876.	0.069
2500.	0.158	4877.	0.069
2502.	0.158	4878.	0.069
2504.	0.158	4879.	0.069
2506.	0.158	4880.	0.069
2508.	0.158	4881.	0.069
2510.	0.151	4882.	0.063
2512.	0.151	4883.	0.069
2514.	0.151	4884.	0.066
2516.	0.158	4885.	0.066
2518.	0.158	4886.	0.066
2520.	0.158	4887.	0.076
2522.	0.151	4888.	0.069
2524.	0.151	4889.	0.076

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2526.	0.151	4890.	0.069
2528.	0.158	4891.	0.066
2530.	0.158	4892.	0.066
2532.	0.158	4893.	0.066
2534.	0.158	4894.	0.079
2536.	0.151	4895.	0.069
2538.	0.158	4896.	0.066
2540.	0.158	4897.	0.063
2542.	0.151	4898.	0.069
2544.	0.151	4899.	0.069
2546.	0.151	4900.	0.066
2548.	0.158	4901.	0.063
2550.	0.151	4902.	0.063
2552.	0.151	4903.	0.06
2554.	0.158	4904.	0.066
2556.	0.158	4905.	0.063
2558.	0.158	4906.	0.069
2560.	0.158	4907.	0.069
2562.	0.158	4908.	0.069
2564.	0.158	4909.	0.069
2566.	0.158	4910.	0.063
2568.	0.151	4911.	0.063
2570.	0.151	4912.	0.069
2572.	0.168	4913.	0.069
2574.	0.158	4914.	0.069
2576.	0.158	4915.	0.069
2578.	0.158	4916.	0.063
2580.	0.158	4917.	0.069
2582.	0.158	4918.	0.063
2584.	0.158	4919.	0.069
2586.	0.151	4920.	0.063
2588.	0.158	4921.	0.063
2590.	0.151	4922.	0.063
2592.	0.151	4923.	0.06
2594.	0.158	4924.	0.063
2596.	0.151	4925.	0.063
2598.	0.151	4926.	0.063
2600.	0.145	4927.	0.069
2602.	0.151	4928.	0.06
2604.	0.151	4929.	0.069
2606.	0.145	4930.	0.063
2608.	0.151	4931.	0.063
2610.	0.151	4932.	0.063
2612.	0.151	4933.	0.069
2614.	0.151	4934.	0.063
2616.	0.151	4935.	0.069
2618.	0.145	4936.	0.069
2620.	0.151	4937.	0.063
2622.	0.151	4938.	0.063
2624.	0.151	4939.	0.069
2626.	0.151	4940.	0.069
2628.	0.151	4941.	0.069
2630.	0.158	4942.	0.063
2632.	0.158	4943.	0.063
2634.	0.158	4944.	0.063
2636.	0.151	4945.	0.063
2638.	0.158	4946.	0.063
2640.	0.151	4947.	0.063
2642.	0.151	4948.	0.063
2644.	0.151	4949.	0.063
2646.	0.151	4950.	0.063
2648.	0.151	4951.	0.063
2650.	0.151	4952.	0.056
2652.	0.151	4953.	0.063
2654.	0.151	4954.	0.063
2656.	0.158	4955.	0.056

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2658.	0.151	4956.	0.056
2660.	0.145	4957.	0.056
2662.	0.151	4958.	0.063
2664.	0.158	4959.	0.056
2666.	0.158	4960.	0.063
2668.	0.158	4961.	0.063
2670.	0.158	4962.	0.063
2672.	0.151	4963.	0.056
2674.	0.158	4964.	0.056
2676.	0.158	4965.	0.056
2678.	0.158	4966.	0.056
2680.	0.151	4967.	0.046
2682.	0.151	4968.	0.046
2684.	0.158	4969.	0.056
2686.	0.151	4970.	0.056
2688.	0.158	4971.	0.063
2690.	0.158	4972.	0.063
2692.	0.158	4973.	0.046
2694.	0.151	4974.	0.056
2696.	0.158	4975.	0.056
2698.	0.158	4976.	0.06
2700.	0.151	4977.	0.056
2702.	0.158	4978.	0.046
2704.	0.151	4979.	0.056
2706.	0.151	4980.	0.056
2708.	0.158	4981.	0.056
2710.	0.158	4982.	0.046
2712.	0.151	4983.	0.056
2714.	0.158	4984.	0.056
2716.	0.158	4985.	0.056
2718.	0.151	4986.	0.056
2720.	0.158	4987.	0.046
2722.	0.158	4988.	0.046
2724.	0.158	4989.	0.046
2726.	0.158	4990.	0.046
2728.	0.158	4991.	0.046
2730.	0.158	4992.	0.056
2732.	0.158	4993.	0.056
2734.	0.151	4994.	0.056
2736.	0.158	4995.	0.046
2738.	0.151	4996.	0.046
2740.	0.151	4997.	0.046
2742.	0.145	4998.	0.046
2744.	0.158	4999.	0.046
2746.	0.158	5000.	0.046
2748.	0.158	5001.	0.046
2750.	0.158	5002.	0.056
2752.	0.158	5003.	0.056
2754.	0.151	5004.	0.056
2756.	0.168	5005.	0.056
2758.	0.158	5006.	0.056
2760.	0.158	5007.	0.056
2762.	0.151	5008.	0.046
2764.	0.158	5009.	0.056
2766.	0.158	5010.	0.046
2768.	0.151	5011.	0.056
2770.	0.168	5012.	0.046
2772.	0.168	5013.	0.046
2774.	0.168	5014.	0.046
2776.	0.158	5015.	0.046
2778.	0.158	5016.	0.046
2780.	0.158	5017.	0.043
2782.	0.158	5018.	0.043
2784.	0.158	5019.	0.043
2786.	0.158	5020.	0.046
2788.	0.158	5021.	0.046

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2790.	0.158	5022.	0.046
2792.	0.158	5023.	0.046
2794.	0.158	5024.	0.046
2796.	0.158	5025.	0.046
2798.	0.158	5026.	0.046
2800.	0.158	5027.	0.046
2802.	0.158	5028.	0.046
2804.	0.151	5029.	0.046
2806.	0.158	5030.	0.046
2808.	0.158	5031.	0.05
2810.	0.158	5032.	0.05
2812.	0.158	5033.	0.046
2814.	0.158	5034.	0.05
2816.	0.168	5035.	0.056
2818.	0.168	5036.	0.046
2820.	0.158	5037.	0.05
2822.	0.158	5038.	0.043
2824.	0.158	5039.	0.046
2826.	0.158	5040.	0.043
2828.	0.158	5041.	0.046
2830.	0.168	5042.	0.04
2832.	0.168		

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Moench

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	2.713	ft^2/min
S	0.006937	
Sy	0.2506	
ß	0.4	
Sw	0.	
r(w)	0.83	ft
r(c)	0.416	ft
alpha	1.0E+30	min^{-1}

K = T/b = 0.02171 ft/min (0.01103 cm/sec)
Ss = S/b = 5.55E-5 1/ft

Objective: Calculate potential drawdown at the Desert Studies Center due to pumping for the proposed Soda Mountain Solar project, assuming there are no hydraulic barriers from the Soda Mountains that form the eastern flank of Soda Mountain Valley.

Approach: Use Theis solution (Theis 1935) to calculate drawdown over time and distance, with assumption of uniform hydraulic conductivity and infinite aquifer (no hydraulic boundaries).

Drawdown ($h_o - h$) can be calculated using the Theis Equation:

$$h_o - h = \frac{Q}{4\pi T} W(u)$$

where h_o is the head at time t=0, h is the head at time t, Q is the pumping rate, and T is the transmissivity. The transmissivity is calculated using the following approximation that assumes uniform aquifer thickness and uniform horizontal conductivity:

$$T = Kb$$

where K is the hydraulic conductivity and b is the aquifer saturated thickness. The well function *W(u)* can be approximated using published tables of values for values of u, which are calculated according to the following equation:

$$u = \frac{r^2 S}{4Tt}$$

where r is the distance to the closest well and S is the storage coefficient.

S = 0.1 (TRC 2013; typical value)

S_y = 0.25 (estimated after field pumping test)

r = 4.5 miles (closest distance from production well to Desert Studies Center)

b = 100 ft (approximate at well location, based on geophysical measurements)

Q_1 = 192 AFY for t = 3 yrs

Q_2 = 33 AFY for t = 30 yrs

Calculations were performed using two different transmissivities, reflecting the upper and lower estimates for the hydraulic conductivity from the numerical model:

K_1 = 3.2 ft/d

K_2 = 0.86 ft/d

Calculations were then performed with expanded estimates of transmissivity and hydraulic conductivity:

K_3 = 32 ft/d (10x upper end value used in numerical model, and greater than the 30 ft/d estimated high end value after field pumping test)

High-end K Case: Let K_1 = 3.2 ft/d

$$T_1 = K_1 b = (3.2\,\text{ft/d})(100\,\text{ft}) = 320\,\text{ft}^2/\text{d}$$

Q_1 = 192 AFY = 22,914 ft^3/d for t_1 = 3 yrs

$$u = \frac{r^2 S}{4T_1 t_1} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(320\,\text{ft}^2/\text{d})(3\text{yrs})(365\text{d/yr})} = 100.7$$

$W(u) \ll 0.000012$ (Table 8.1, Freeze & Cherry, 1979, p318)

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{22{,}914\,\text{ft}^3/\text{d}}{(4)(\pi)(320\,\text{ft}^2/\text{d})} * (< 0.000012)$$

$$h_o - h \ll 0.000068\,\text{ft}$$

Q_2 = 33 AFY = 3,938 ft^3/d for t_2 = 30 yrs

$$u = \frac{r^2 S}{4T_2 t_2} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(320\,\text{ft}^2/\text{d})(30\text{yrs})(365\text{d/yr})} = 10.07$$

$W(u) < 0.000012$ (Table 8.1, Freeze & Cherry, 1979, p318)

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{3{,}938\,\text{ft}^3/\text{d}}{(4)(\pi)(320\,\text{ft}^2/\text{d})} * (< 0.000012)$$

$$h_o - h < 0.000012\,\text{ft}$$

Total drawdown = drawdown after t_1 = 3 yrs + drawdown after t_2 = 30 years

= <0.000068 ft + <0.000012 ft

Total possible drawdown <0.000080 ft

Low-end K Case: Let K_2 = 0.86 ft/d

$$T_2 = K_2 b = (0.86\,\text{ft/d})(100\,\text{ft}) = 86\,\text{ft}^2/\text{d}$$

Q_1 = 192 AFY = 22,914 ft^3/d for t_1 = 3 yrs

$$u = \frac{r^2 S}{4T_2 t_1} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(86\,\text{ft}^2/\text{d})(3\text{yrs})(365\text{d/yr})} = 374.7$$

$W(u) < 0.000012$ (Table 8.1, Freeze & Cherry, 1979, p 318)

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{22{,}914\,\text{ft}^3/\text{d}}{(4)(\pi)(86\,\text{ft}^2/\text{d})} * (< 0.000012)$$

$$h_o - h < 0.00025\,\text{ft}$$

Q_2 = 33 AFY = 3,938 ft^3/d for t_2 = 30 yrs

$$u = \frac{r^2 S}{4T_2 t_2} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(86\,\text{ft}^2/\text{d})(30\text{yrs})(365\text{d/yr})} = 37.5$$

$W(u) < 0.000012$ (Table 8.1, Freeze & Cherry, 1979, p318)

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{3{,}938\,\text{ft}^3/\text{d}}{(4)(\pi)(86\,\text{ft}^2/\text{d})} * (0.000012)$$

$$h_o - h < 0.000044\,\text{ft}$$

Total drawdown = drawdown after t_1 = 3 yrs + drawdown after t_2 = 30 years

= <0.00025 ft + <0.000044 ft

Total possible drawdown < 0.00029 ft

Sensitivity Testing - Extreme Ends of K Range Analysis

Assume for the Higher-end Case K = 10 times the High-end Case K, and for the Highest-end Case, K = 5 times the Higher-end Case. Assume for the Lowest-end Case, K = 1/5 of the Low-end K value.

***Revised* Higher-end K: Let K = 10 x 3.2 ft/d = 32 ft/d**

$$T_2 = K_2 b = (32 \text{ ft/d})(100 \text{ ft}) = 3200 \text{ ft}^2/\text{d}$$

Q_1 = 192 AFY = 22,914 ft^3/d for t_1 = 3 yrs

$$u = \frac{r^2 S}{4T_2 t_1} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(3200 \text{ ft}^2/\text{d})(3\text{yrs})(365\text{d/yr})} = 10.07$$

$$W(u) < 0.000012 \text{ (Table 8.1, Freeze \& Cherry, 1979, p 318)}$$

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{22{,}914 \text{ ft}^3/\text{d}}{(4)(\pi)(3200 \text{ ft}^2/\text{d})} * (0.000012)$$

$$h_o - h < 0.0000068 \text{ ft}$$

Q_2 = 33 AFY = 3,938 ft^3/d for t_2 = 30 yrs

$$u = \frac{r^2 S}{4T_2 t_2} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.250}{(4)(3200 \text{ ft}^2/\text{d})(30\text{yrs})(365\text{d/yr})} = 1.007$$

$$W(u) = 0.22 \text{ (Table 8.1, Freeze \& Cherry, 1979, p318)}$$

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{3{,}938 \text{ ft}^3/\text{d}}{(4)(\pi)(3200 \text{ ft}^2/\text{d})} * (0.22)$$

$$h_o - h = 0.021 \text{ ft}$$

Total drawdown = drawdown after t_1 = 3 yrs + drawdown after t_2 = 30 years

= <0.0000068 ft + 0.021 ft

Total possible drawdown < 0.021 ft

Highest-end K: Let K = 5 x 32 ft/d = 160 ft/d

$$T_2 = K_2 b = (160 \text{ ft/d})(100 \text{ ft}) = 16000 \text{ ft}^2/\text{d}$$

Q_1 = 192 AFY = 22,914 ft^3/d for t_1 = 3 yrs

$$u = \frac{r^2 S}{4T_2 t_1} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(16000 \text{ ft}^2/\text{d})(3\text{yrs})(365\text{d/yr})} = 2.01$$

$W(u) = 0.049$ (Table 8.1, Freeze & Cherry, 1979, p 318)

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{22{,}914 \text{ ft}^3/\text{d}}{(4)(\pi)(16000 \text{ ft}^2/\text{d})} * (0.049)$$

$$h_o - h = 0.0056 \text{ ft}$$

Q_2 = 33 AFY = 3,938 ft^3/d for t_2 = 30 yrs

$$u = \frac{r^2 S}{4T_2 t_2} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(16000 \text{ ft}^2/\text{d})(30\text{yrs})(365\text{d/yr})} = 0.201$$

$W(u) = 1.22$ (Table 8.1, Freeze & Cherry, 1979, p318)

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{3{,}938 \text{ ft}^3/\text{d}}{(4)(\pi)(16000 \text{ ft}^2/\text{d})} * (1.22)$$

$$h_o - h = 0.024 \text{ ft}$$

Total drawdown = drawdown after t_1 = 3 yrs + drawdown after t_2 = 30 years

= 0.0056 ft + 0.024 ft

Total possible drawdown = 0.03 ft

Lowest-end K Case: Let K = (0.86 ft/d) / 5 = 0.17 ft/d

$$T_2 = K_2 b = (0.17 \text{ ft/d})(100 \text{ ft}) = 17 \text{ ft}^2/\text{d}$$

Q_1 = 192 AFY = 22,914 ft^3/d for t_1 = 3 yrs

$$u = \frac{r^2 S}{4T_2 t_1} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(17 \text{ ft}^2/\text{d})(3\text{yrs})(365\text{d/yr})} = 1895.4$$

$$W(u) \ll 0.000012 \text{ (Table 8.1, Freeze \& Cherry, 1979, p 318)}$$

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{22{,}914 \text{ ft}^3/\text{d}}{(4)(\pi)(17 \text{ ft}^2/\text{d})} * (\ll 0.000012)$$

$$h_o - h \ll 0.0013 \text{ ft}$$

Q_2 = 33 AFY = 3,938 ft^3/d for t_2 = 30 yrs

$$u = \frac{r^2 S}{4T_2 t_2} = \frac{[(4.5\text{miles})(5280\text{ft/mile})]^2 * 0.25}{(4)(17 \text{ ft}^2/\text{d})(30\text{yrs})(365\text{d/yr})} = 189.5$$

$$W(u) \ll 0.000012 \text{ (Table 8.1, Freeze \& Cherry, 1979, p318)}$$

$$h_o - h = \frac{Q}{4\pi T} W(u) = \frac{3{,}938 \text{ ft}^3/\text{d}}{(4)(\pi)(17 \text{ ft}^2/\text{d})} * (\ll 0.000012)$$

$$h_o - h \ll 0.00022 \text{ ft}$$

Total drawdown = drawdown after t_1 = 3 yrs + drawdown after t_2 = 30 years

= <<0.0013 ft + <<0.00022 ft

Total possible drawdown << 0.0015 ft

Discussion

The conceptual model for the site is that the Soda Mountains, which form a crystalline intrusive bedrock mass at the eastern wall of the Soda Mountain Valley, serve as a hydraulic barrier to flow of groundwater. Some have proposed that the mountains may be fractured such that pumping effects could be transmitted outside the valley and affect water levels at the DSC. While this contention seems highly unlikely given the low permeability nature of crystalline bedrock compared to that of the sand aquifer in the Soda Mountain Valley, it can be tested readily by assuming the mountains had the same permeability as the sand and gravel aquifer, as if the sand aquifer extended all the way to the DSC and beyond.

The Theis equation can be applied to evaluate the drawdown in a uniform aquifer of infinite extent. It was applied here using projected pumping rates during the life of the project, and drawdown over time and distance was calculated.

At the reasonable upper end of hydraulic conductivity estimates for the aquifer, 3.2 ft/d, the drawdown, calculated based on the assumption of an infinite aquifer with uniform properties, would be approximately 0.004 ft at the distance of 4.5 miles to the DSC after 33 years of pumping. At the lower end of the K estimate (0.86 ft/d), the drawdown at the DSC after 33 years of pumping would be less than 0.0003 ft.

Sensitivity testing was conducted by extending the range of K values tested, with five times lower and five times higher estimates of K. The sensitivity testing showed that even for K values that were five times higher and five times lower than what has been selected as a reasonable range, the resulting drawdown calculations indicate that the drawdown at the DSC would be 0.06 feet or less for all K values, over the life of the project.

Conclusion:

The results indicate that even if the mountains that form the eastern wall of the valley did not exist, and the aquifer extended without any hydraulic barriers directly to the DSC, the drawdown that would result from pumping over the life of the project would not be reliably measurable (0.06 feet or less) at the DSC.